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OF THE

AMERICAN ASSOCIATION OF NURSE ANESTHETISTS

NOVEMBER 1946

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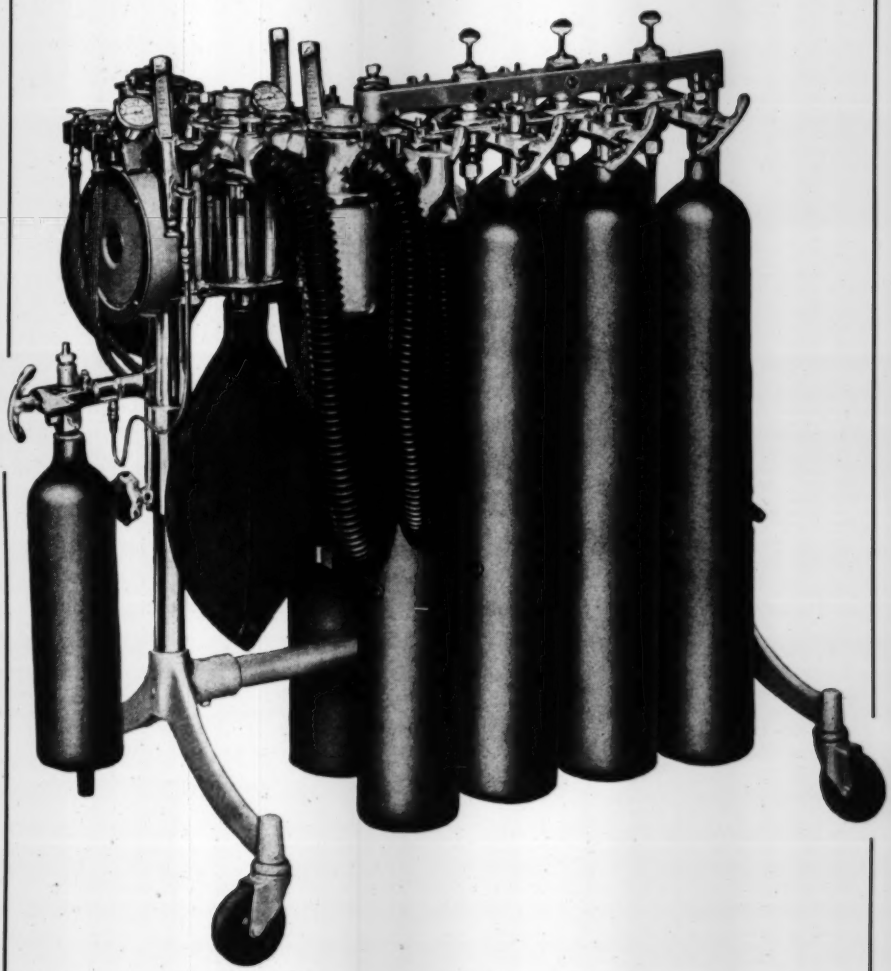

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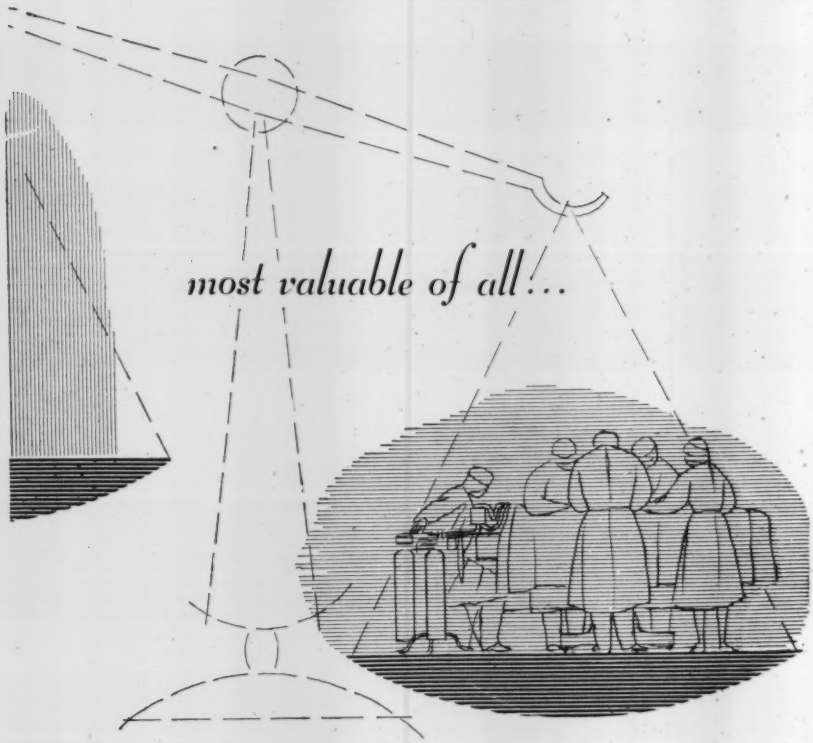

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*Walton, R.P.: History of Anesthetic Drugs. J. South Carolina Med. Assoc. 40:60 (March) 1944.

MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858

Anesthesia in Thoracic Surgery

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It is not merely a trite remark to say that the anesthetist plays her most important role when she administers an anesthetic to a thoracic surgical case. In the stress of circumstance, operative procedures on all other parts of the body can be performed without expert aid at the head of the table. This is not so when operative work is to be carried out with the thoracic cage opened. It is well to emphasize the importance of the role of the anesthetist in thoracic surgery. In no other situation can the anesthetist and surgeon be so truly classified as a team. It is no mere coincidence that the gate to chest surgical work was opened in 1910 by one of the most important recent advances in anesthesia, namely, the introduction of intratracheal insufflation by Meltzer and Auer. Thoracic surgery demands a true understanding of physiological principles. Anesthesia in thoracic surgery depends upon and demands the greatest realization of the principles of the normal and pathological physiology of respiration and circulation.

Advances in this field of surgery have been so rapid within recent years, that it would be well to dwell briefly upon the present scope of the field of thoracic surgical work. Being the youngest of the specialties, one has only to listen back to the opening of this century to hear the first wail of this frequently troublesome offspring. His career has often been burdensome, many times tragic, constantly exciting, but always progressive. The dangers attendant upon alterations of the normal intrathoracic pressure relationships have been obvious since the first major thoracic open wound of ancient times, but it was not until Quenu, in 1896, presented the first positive pressure apparatus in the form of a crude diver's helmet that any rational elective opening of the chest cage could be considered. Tuffier appreciated the awkwardness of this apparatus and recommended insufflation through a curved copper tube, and with equipment based upon this prin-

Read at the Southeastern Nurse Anesthetists Association meeting, Jacksonville, Florida, April 26, 1946.

*Chief, Division of Orthoracic Surgery, Emory University Medical School.

ciple sufficiently perfected by Dr. Matas of New Orleans, Parham was able to remove successfully a chest wall tumor in 1898.

In 1904, Ferdinand Sauerbruck invented the first negative pressure apparatus consisting of a small chamber not unlike a Drinker respirator, large enough for the surgical team and the patient's body. This was improved and first used in the United States by Dr. Willy Meyer in 1908. However, these chambers were cumbersome and prohibitively expensive. The great milestone was passed in 1910, when Meltzer and Auer introduced intratracheal insufflation for the prevention of operative pneumothorax. Since that time, advances have been based upon sound and extensive experimental work and clinical trial.

We now know that the lungs are normally maintained in contact with the chest wall by a force of about 7 millimeters of mercury (negative intrapleural tension), so when both chests are widely opened there must be a pressure within the trachea of at least this amount, in order to hold the lungs in normal distention. Since the advent of intratracheal positive pressure, multiple operative procedures have become possible upon the thoracic contents, namely, partial or complete removal of the lung, partial or complete removal of the esophagus, excision of mediastinal tumors, surgery of the diaphragm, heart, and great vessels.

What other physiological factors must be considered in thoracic surgery? The dangers of thoracic work in the presence of a markedly lowered vital capacity were brought forth by the tragedies coincident with empyema drainage methods in the influenza epidemic of World War I. This led to the work of the Empyema Commission in 1919 and a fuller understanding of vital capacity in relation to the open chest cavity by the work of Evarts Graham. Vital capacity is simply a measurement of the maximum possible air obtainable upon a single breath. Some lowering of this vital capacity is present in most cases of thoracic surgery and is further lowered by the collapse of the lung on the side of the chest operated upon, all of which emphasized the need for high oxygen intake during anesthesia.

The pathologic physiology, of course, varies greatly with individual cases. Whether the primary disease is suppurative in the lung, or circulatory as in cardiac and vascular lesions, the primary worry is a satisfactory oxygen supply. In suppurative cases, there is not only considerable purulent discharge in the diseased area of the pulmonary tree, which may flow over into the so-called normal segments during manipulation, but also, the presence of such disease has usually set up a chronic bronchial inflammation throughout the entire pulmonary system. Therefore, it is a cardinal rule in thoracic work to maintain a clean and open airway at all times. Thus, the endotracheal tube not only allows control of the intrapulmonary pressure, but also a constant and easy egress for suction and maintenance of a clear airway.

Certain of the pathological changes associated with chest disease are characteristic of any chronic debilitating lesion, thus, these patients are frequently undernourished, anemic, liable to partial avitaminosis, and may have poor general muscle tone. It is vital that as many as possible of these defects be corrected preoperatively, with the aid

of transfusion, oral and parenteral vitamin and protein therapy, as well as chemotherapy directed towards control of inflammatory destructive processes. These factors do not involve the anesthetist except in that they stress to her that she must aid the patient in every possible way in order to bring the procedure to a happy conclusion.

With this brief summary of the physiological and pathological factors present, how does the anesthetist proceed to play her role in the thoracic surgical team? First, and this holds for all members of any team, she must give due consideration to the known obstacles ahead and she must also be cognizant of potential obstacles with which she may have to contend. An over-confident anesthetist is by no means necessarily a competent one. She must appreciate the coordinate factor in her relationship to the patient-anesthetist-surgeon combine.

Many physiological changes occurring in the process of thoracic surgical procedures can be the direct result of activity occurring in the operative field. The effect of such changes, as noted by the anesthetist, must be made known constantly to the operator. Therefore, it is a fundamental duty on her part to notify the surgeon of any important changes in vital signs. Hence, if certain that a manipulation on the part of the surgeon is upsetting the patient, immense gain may be obtained by temporary or periodic cessation of such manipulation, resting of the patient, and reinflation of the lungs. Also, it is obvious that if the patient be suctioned and the cough reflex initiated during a particularly delicate period of dissection, unnecessary hazards are added to an already difficult procedure.

Second, the anesthetist must establish the religion of a clear airway as part and parcel of her anesthetic regime. She realizes that anoxia is a matter of degree and the cumulative effects of partial anoxia are equal in severity, but oftentimes more insidious than complete anoxia. The CO_2 accumulation must be constantly looked for during thoracic procedures.

What signs present themselves to the anesthetist in relation to obstruction of the respiratory passage? You are all familiar with the audible signs of moisture in the respiratory tract and utilize catheter suction to remedy this situation. However, to get audible signs of obstruction demands that the obstruction be incomplete, namely, that some gases can pass around it in order to make it audible. A large segment of the bronchial tree can be occluded by thick pus, or a small blood clot, and there will be no audible sounds, and the inexperienced anesthetist listens to the tubes and calls the airway clear. Such anoxia may only manifest itself by progressive slowing of the pulse, drop in blood pressure, or so-called "unexplained" cyanosis. Such obstruction may be relieved by endotracheal catheter suction, but frequently it may demand the immediate use of the bronchoscope with temporary interruption of the operative procedure. This is particularly liable to occur if blood has gotten into the bronchial tree and then proceeded to clot formation. Thus, it is a cardinal principle of safe thoracic surgery that no thoracic procedures are attempted without bronchoscopic instruments at hand and a competent team present to handle them. In other words, the thoracic surgeon must also be an endoscopist and an ardent disciple of the religion of the clear airway.

Third, the anesthetist must appreciate the physiological handicaps inherent to the patient from open chest procedures. Try to maintain the patient as near to a normal cardio-respiratory cycle as possible. Do not allow him to put forth unnecessary effort and accumulate unnecessary fatigue. To this end, the thoracic anesthetist removes all possible encumbrances in the form of dead space, CO_2 accumulation, or fatiguing respiratory effort. Chest procedures are often lengthy ones and the patient who has assisted respirations fatigues much more slowly than the non-assisted one. The anesthetist insists upon an adequate-sized endotracheal tube, a to-and-fro cannister almost at the patient's lips, with the bag attached, and which bag is constantly being manually compressed and relaxed to aid respiratory movements.

With these fundamentals in mind, let us consider the details of a thoracic procedure. Prior to surgery, adequate attention has been paid to the patient's hemoglobin, serum proteins, and general support. If considerable pulmonary secretions are present, the patient is given thorough postural drainage, associated with wide pulmonary excursion, to empty the tree as much as possible prior to going to the operating room.

In these cases of suppurative disease, preoperative atropine is absolutely contraindicated, as drying of such secretions prohibits their free mobility and access to catheter suction. Some workers prefer apneaic anesthesia with manual control of respiratory movements during operation, but I feel there are three definite contraindications to this method, namely: (1) Such suppression unduly and unsafely depresses the cough reflex. (2) Such anesthesia is often complicated by secondary pulmonary edema. (3) Such apnea departs from the policy of trying to maintain as nearly normal respiratory physiology as possible and can become irreversible apnea.

Therefore, we keep preoperative morphine medication at a minimum and barbiturates are only given the evening prior to surgery. The opiate should be given one to one-and-one-half hours prior to induction (to avoid cumulative depressant effects upon the respiratory center), so that the peak of the effect of the drug has been approached, if not reached, by the time of the anesthetic induction.

The patient is induced in the usual manner with cyclopropane and oxygen in a 33-1/3 to 50 per cent cyclopropane mixture until the patient is brought to the upper border of the third stage, or slightly deeper, in order to pass the endotracheal tube. If cardiac irregularities occur, we do not hesitate to change over to an ether, nitrous oxide-oxygen mixture. It is important to stress that the passage of the endotracheal tube be associated with a minimum of trauma to the larynx. After the tube has been passed and the patient has adjusted himself to it, the cyclopropane percentage is reduced, according to the needs of the patient, in order to maintain him at the lower border of the first plane, or upper border of the second plane of the third stage. It is particularly desirable to keep the bronchial cough reflex active as this facilitates the removal of bronchial secretion by suction. A to-and-fro absorber is used with an absolute minimum of connections at proximal end so that all possible dead space may be reduced. A good individual suction machine is constantly available to the

anesthetist and a complete bronchoscopic setup is within immediate reach.

The patient is then placed in the position required for the operative procedure, and an intravenous drip placed in both an arm and a leg vein. Either 5 per cent glucose in distilled water, or M/6 sodium lactate are started in these clyses at this time. Because of potential pulmonary edema, saline is not used. The operation is then started, and the anesthetist uses suction frequently, but only after notifying the surgeon prior to each use of the suction catheter. Just preceding the opening of the pleura, the anesthetist is notified and she again thoroughly aspirates the trachea and then starts a positive pressure of 7 millimeters of Hg, following which the pleura is opened. As soon as the patient has become adjusted to the open pneumothorax, the pressure is then dropped to and maintained at about 3 milimeters of mercury.

It is well to remember that spreading of the ribs may be associated with temporary respiratory cessation, in which case, the amount of spread is released and then, gradually increased. Assistance of respiration by gentle, rhythmic manual compression and release of the bag is started at this time and continued throughout the procedure. If manipulation within the thoracic cavity is associated with vagal stimulation and slowing of the heart, we do not hesitate to instill 1 per cent novocaine directly into the exposed vagus nerve. It is also a cardinal rule that a constant drip of blood into both the venaclyses be started as soon as the chest is opened. At frequent intervals during the procedure the trachea is suctioned and the lungs re-expanded, which is of considerable aid in keeping the pulmonary tree clear of secretions and bathing the lungs clear of CO_2 accumulation. It is well to mention that in assisting the respirations and in expanding the lung at the completion of the procedure, the manual compression is made to coincide with the onset of the patient's inspiration.

When the intrathoracic portion of the procedure is completed, the lung is visibly re-inflated prior to closure of the chest to insure a patent bronchus and prevent areas of atelectasis. The pressure manometer on the machine is so set that a pressure above 10 millimeters of Hg cannot be obtained, as such a pressure is all that is necessary for re-expansion. Higher pressures frequently injure the lung parenchyma and lead to mediastinal emphysema and postoperative spontaneous pneumothorax. After closure of the chest wall, the pleural cavity is aspirated of contained air. If a postoperative bronchoscopy is planned, anesthesia is maintained until after application of the chest wound dressing. It is extremely important in all cyclopropane anesthesia, but especially in chest disease, to leave inert gases in the alveoli. Therefore, as cyclopropane is discontinued, we give a mixture of 20 to 30 per cent oxygen and 80 to 70 per cent helium, or a 50/50 $N_2O + O_2$ mixture to prevent alveolar collapse.

The completion of thoracic procedures is frequently associated with moderate to marked drops in the systemic blood pressure, and one cannot too strongly emphasize the dangers inherent upon too early movement of such patients from the operating table. No chest surgical patient is allowed to be moved until the systolic pressure has returned to a level within 10 to 15 points of the starting pressure and this

pressure maintained from five to ten minutes in the supine position.

In summary then, we find:

(1) Thoracic anesthesia can be the anesthetist's most challenging, and thus, her most satisfying anesthesia.

(2) The thoracic anesthetist is an integral part of the chest-surgery team, and both the surgeon and the anesthetist keep each other in a constant state of awareness.

(3) The chest anesthetist is a disciple of the religion of a clear airway at all times. Suction is the watchword.

(4) Maintain the cardio-respiratory physiology as nearly normal as possible.

(5) Assisted respirations prevent a fatigued patient.

(6) Minimize dead space and prevent a patient from being fatigued.

(7) *Constant watchfulness, constant awareness, constant assistance, constant maintenance of a clear airway* — these are the requisites of success in thoracic surgical anesthesia.

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Anesthetic Problems in the Surgical Treatment of Congenital Atresia of the Esophagus With Tracheo-esophageal Fistula

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Few anesthetists have been asked to have a part in the rare operation of surgical correction of esophageal atresia in the newborn and to face the problems involved. The operation has been recognized as practical for only five years and the surgical literature contains reports from only six surgeons who have had one or more survivals. However, when the doctors and nurses who care for newborn infants suspect and diagnose the condition early and refer the little patients to interested chest surgeons, the procedure will be carried out more and more frequently. Also, the problems of this particular operation are to a large extent those of any operation within the chest of a tiny baby. One by one, the various congenital defects in the chest are being dealt with successfully. We can mention diaphragmatic hernia, congenital heart disease (pulmonary stenosis), double aortic arch, and in older children, patent ductus arteriosus.

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Read at the Tri-State Nurse Anesthetists Assembly, May 1946, Chicago, Ill.

First of all, it is not unlikely that a nurse anesthetist may sometime help to make the primary diagnosis. While "standing by" in the delivery room, she may overhear such a remark as "Baby Jones is already a feeding problem. When he takes a few swallows of formula, it all comes out his nose!" or, "That baby seems to have a lot of trouble with mucus in its throat." In such a case, the doctor in charge of the nursery should be notified at once, so that the proper x-ray studies can be carried out. After a drop or two of lipiodol (never barium) has been injected through a cathether in the upper esophagus, the film may look something like that shown in Figure 1. Such a picture indicates that the common anomaly which is depicted diagrammatically in Figure 2 is present. There is an upper blind pouch and a lower segment which connects with the trachea. Obviously, feeding is impossible and, furthermore, if a gastrostomy were done, food put in the stomach would certainly be regurgitated into the lungs! The problem of the surgeon is that of carrying out the tedious technical procedure of discon-

Fig. 1. Typical roentgen findings in an infant with atresia of the esophagus and tracheo-esophageal fistula. The upper blind pouch has been filled with iodized oil. The presence of air in the gastro-intestinal tract indicates the presence of the fistula.

necting the lower segment from the trachea and attaching it by end-to-end anastomosis to the upper segment. The problem of the anesthetist is that of making certain that the operation is completed on a living child.

My remarks on the anesthetic problems of atresia of the esophagus are based on an operative experience of eight cases. Five of these are alive. There were no deaths on the table or within twenty-four hours. Of the three infants who did not survive, two had pneumonia at the time of operation; one of these also had congenital heart disease and the other had a very short upper segment, making anastomosis impossible. The third case expired two weeks after operation with a recurrence of the tracheo-esophageal fistula.

The operation is a long one. My first case, a successful one, took three hours and 35 minutes. My best time has been two and a half hours. Since the procedure is so time-consuming, there is general agreement among the surgeons who have had successful cases, that local anesthesia is desirable. One-quarter or one-half per cent procaine may be used. Before the operation proper is begun, a cannula must be placed in an ankle vein for the administration of 50 to 75 cc. of blood. Following infiltration of the skin between the right scapula and the vertebral column, incision is made to expose the upper ribs. The second to the fifth intercostal nerves are blocked. Thereafter, no procaine is used. Small segments of the second through the fifth ribs are removed to provide access to the mediastinum. The pleura is

gently pushed away from the chest wall and mediastinal structures. Every precaution is taken not to make a tear in the pleura. If it is not opened, the infant should have little or no difficulty with respiration. On the other hand, if it is inadvertently opened, there is apt to be complete collapse of the right lung, with the further complication of mediastinal shift or even contralateral pneumothorax with collapse of the other lung. Oxygen administration under positive pressure is then imperative and preparations for this should have been made carefully.

Since the operation has been progressing under local anesthesia, an intratracheal tube cannot be used in this emergency. Even if the infant were under anesthesia, it is doubtful if intubation would be advisable. The delicate linings of the air passages of the newborn child react poorly to the mildest trauma. There is only one report in the literature of the use of the intratracheal tube for this operation. Cassels and Yeager described extreme damage to the vocal cords after a three-hour operation. Continuous intubation was necessary from the third postoperative hour until death, fifty-six hours later. It was necessary to reinsert the tube 12 times.

Hence, if the lungs must be inflated by positive pressure, it is advisable to do this with the face mask. The smallest and best-fitting mask available should be in readiness. It must be remembered that the tidal air of the newborn infant is very small, and even a little dead space in the anesthesia apparatus may present insuperable difficulties to the child. The use of very small masks and connections is advantageous. At the Children's Hospital in Boston, Ladd and Gross prefer a unit consisting of the following parts, attached in the order named: mask, small soda lime cannister, rebreathing bag, and supply tube for the anesthetic mixture.

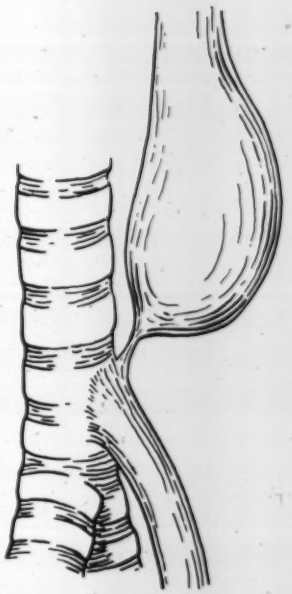

Fig. 2. Diagram of the anomaly indicated by the film in Fig. 1.

If the ordinary circular arrangement of intake and outflow tubes is used and positive pressure is necessary, one should provide an excess of oxygen, allowing escape through the pressure-limiting valve which is set at 10 millimeters. This pressure cannot be maintained for continued anesthesia because of the resistance to expiration. In this situation, a differential in pressure must be brought about by intermittent manual pressure on the bag. If positive pressure is not necessary, it is advisable to disconnect the return flow tube from the machine, allowing an excess of the anesthetic mixture to flow past the mask. This insures a fresh supply of oxygen and no resistance to expiration.

Although it is desirable to complete the operation under local anesthesia, if the infant strains and cries with vigorous respiratory movements, it may be impossible to continue with the delicate suturing procedure in the forming of the anastomosis. The lower segment moves with each movement of the diaphragm and the upper segment moves with swallowing. Therefore, the surgeon may ask for general anesthesia during this part of the operation. A little drop ether may suffice. Or, ether vapor or cyclopropane may be given with the machine. Cyclopropane is to be preferred to the other gaseous anesthetics because of the large percentage of oxygen which may be given with it.

Of the eight cases operated on by me, four had local anesthesia alone, two had local and cyclopropane, and two had local and ether. Most of the anesthetics were administered by Mrs. Lenore Gribble.

After the operation, the infant is placed in an oxygen tent-incubator. There are apt to be some alarming spells of cyanosis during the first day or two, and facilities for the aspiration of the pharynx and for positive pressure oxygen administration should be at hand.

In summary, we can state that tiny infants tolerate long operative procedures well, as long as attention is paid to the basic physiologic principles of maintenance of blood volume and maintenance of the oxygen saturation of the blood. Therein lies the responsibility of the anesthetist.

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Experiences in Anesthesia in China

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The experiences on which this paper is based were acquired in connection with twenty years' service with the Hsiang-Ya Medical College at Changsha, Hunan, China. This institution derived from the Yale-in-China Hospital founded by Dr. Edward H. Hume in 1906. In 1913, the Hsiang-Ya Medical School was organized as a co-operative venture between the Province of Hunan and the Yale-in-China Association. Both sponsors contributed to the cost of equipment and running expenses, the Chinese taking special responsibility for the medical school and the Americans for the hospital. When I first joined the faculty in 1923, the medical college was a well-organized, going concern. The first class had graduated the year before. The hospital was housed in a fine modern structure and had all the departments usually found in a general hospital. Dr. F. C. Yen was Dean of the School and Hospital Superintendent. The staff was about equally divided between Chinese and non-Chinese. In addition to the Medical School, there was a School of Nursing under the direction of Miss Nina Gage. The excellent work of the graduates of this school, especially during the later war years, is an eloquent tribute to the technical quality and professional morale developed by Miss Gage and her associates.

Anesthesia: When the new hospital at Changsha was opened in 1921, the Department of Anesthesia was under the direction of a well-trained nurse anesthetist, who had formerly been at the Peter Bent Brigham Hospital at Boston. Most of the anesthesia was local, spinal, ether, or chloroform. There were, however, some gas anesthesia sets, and for a while, oxygen and nitrous oxide were available. It became, however, almost impossible to get refills of gas and about the time I arrived, gas anesthesia had been discontinued.

After the first two years, the anesthesia was taken over by Dr. Ota Waters. From 1927 on, we had no one giving full time to anesthesia. One of the doctors of the surgical staff was responsible for this department as part of his duties and we all took a hand in supervising our own cases. All anesthetics, including spinal, were administered by our senior medical students, except in a

Read at the twelfth annual meeting of the New York State Association of Nurse Anesthetists, Hotel Pennsylvania, New York City, June 11, 1946.

few critical cases. During the war, we were greatly restricted both in staff and supplies at times, but we made out as best we could.

Local: Most of our minor work and much of our major operating was done with local anesthesia, either as an infiltration of ½% novacaine to which one drop of adrenalin per 30 cc. had been added, or as nerve-block anesthesia, for which we used 2% novacaine. A good deal of our work on the limbs and the face was done under block anesthesia.

Spinal: Our routine in most abdominal cases was spinal. For this, we used a 5% novocaine solution which was diluted with cerebrospinal fluid, injecting from 100 to 200 mg. of novocaine through a lower lumbar tap. On the whole, this proved satisfactory. We had our share of the usual difficulties, such as anesthesia wearing off before we were through the operation. In such case, we usually supplemented the spinal with a general ether anesthesia. We also encountered occasional cases where we did not succeed in tapping the spinal fluid. Somewhat less frequently, we would apparently get a good injection, but not produce the desired degree of anesthesia. Spinal had a special value for our work, as cost was an important factor. Over a period of years, the cost of a spinal anesthesia was found to average around ten cents.

During the years 1923 to 1927, several good hospitals were using spinal anesthesia for operations involving the upper chest, like radical mastectomies, and even for head cases, such as the resection of an antrum for carcinoma. I was especially interested in their experience and, although we never adopted such procedure as a routine, we did a few cases of this kind without encountering a fatality. For producing this anesthesia, we injected about 150 to 200 mg. of novocaine under the lumbar spine with one quick, forceful emptying of the syringe. Patients so treated developed a satisfactory anesthesia. When the area of anesthesia reached up to the clavicle, they would lose consciousness, but would continue breathing. The systolic blood pressure would be low. This came rapidly back to normal as the anesthesia wore off. Since respiration continued, we concluded the novacaine anesthesia did not reach as high as the medulla. We explained the loss of consciousness as connected with the degree of cerebral anemia produced by the fall in blood pressure. This anesthesia was used intentionally, or inadvertently, for a total of about twenty cases. Although our experience was satisfactory, we felt that chances for a dangerous situation developing were too great and discontinued the use of this type of anesthesia after 1927. I mention it now only because of its interest as evidence of what might be done under spinal. I have never felt inclined to test it further. As far as I know, the use of such high spinal anesthesia has nearly dropped out of medical practice. We had not used continuous spinal up to 1943.

Ether and Chloroform: We also used both ether and chloroform. The use of these two depended more on what supplies we had on hand than on the type of patient. In general, we used chloroform in short cases requiring a general anesthesia and on cases with a history of respiratory difficulty. Chloroform was only administered by those who had had considerable experience with it. Ether anesthesia was used more frequently and all our students gave a

number of ether anesthesias before graduating.

In connection with the use of ether, it was routine practice to protect the lips by smearing petrolatum over them. Most of the Chinese patients would try very hard to lick this off and swallow it. This was quite natural, inasmuch as they had no experience in the use of face creams or other ointments for protecting the skin and lips. It was particularly noticeable in children who would assume, when the petrolatum was applied, that it was medicine to put them to sleep. They eagerly attempted to swallow this down that they might go to sleep the faster.

Occasionally, we would give a colonic ether. These were usually demonstrations in connection with the course in anesthesia. We used an ether-oil mixture. The added cost and administrative details of this anesthetic caused us to avoid it as a regular procedure. I remember very well one instance when we used a colonic ether anesthesia as a demonstration for the class. Within a few minutes after administering the ether in oil by rectum to the patient, about 40 years old and having a large fibrous uterine tumor, she stopped breathing. Artificial respiration was started. A tube in the rectum easily siphoned off most of our mixture. We performed artificial respiration from eight o'clock in the morning until three in the afternoon. By that time, she was able to breath naturally. By the end of three days, she was in such good shape we scheduled her again for operation. Using some fresh ether on two other patients and finding it worked normally, we very cautiously tried her again, using an open drop gauze mask. She proved very susceptible to it. I remember that we carried her for the one hour and a half in which the hysterectomy was completed on a total amount of under 30 cc. of ether.

Morphine-Scopolamine: Our routine preoperative sedative for any major adult case was morphine and scopolamine. For a good-sized man, we would give from 1/6th gr. to 1/4th gr. morphine and about 1/150th of scopolamine. For a smaller adult, we use from 1/8th gr. to 1/6th gr. of morphine and 1/200th gr. of scopolamine.

Around 1924, one of our staff was especially interested in the use of morphine and scopolamine as the sole medication. In the course of the next three years, we did 245 major operations under this twilight sleep. Of these, 52 were major operations of mine. This whole series was reported to the Chinese Medical Society in Peiping in 1926. Our dosage was usually 1/4th gr. of morphine and 1/100th gr. of scopolamine given one-half hour before operation. If the operation continued over a couple of hours and the patient began to be uncomfortable, we would give another 1/6th gr. of morphine. This would usually be followed by a return, within the next five minutes, to a satisfactory operating state. I remember one long case of gunshot wound of the chest with a retained bullet in the lung which I did with the use of this anesthesia. The procedure took me over four hours and, in this case, anesthesia was very satisfactory.

About one out of five cases in which we attempted to use only twilight sleep, the patient would be too reactive to stimulus. In such cases, we usually supplemented the morphine and scopolamine with a little ether. About one in twenty cases on this dosage developed

an alarming degree of respiratory depression. We did not lose a single case in this series, but we had several very close calls.

Our routine was to schedule most cases for twilight sleep, with the expectation of supplementing by local anesthesia. If, on starting the operation, there was no response to the incision, we would proceed without using any local anesthesia. Usually, when there was no response to the incision, there was no evidence of discomfort for the rest of the operation.

I remember a case of low-grade, bilateral, pulmonary tuberculosis where the patient had a chronic infection of the gall bladder associated with frequent attacks of colic. It was possible to remove his gall bladder, full of stones, without any difficulty due to this type of anesthesia. Any sudden, jerky movement was to be avoided, in such patients as, occasionally, it would wake them up. In a few of these cases, the satisfactory twilight-sleep condition would pass off rather abruptly, but in the majority of them, one would have plenty of warning of increasing sensory stimulation.

Ethyl Chloride: For short simple procedures, like opening abscesses or setting simple fractures, we made considerable use of ethyl chloride as a general anesthesia. We used this anesthesia very frequently in our out-patient department, the patient usually recovering so completely as to be able to go home without difficulty after operation, in spite of having had a general anesthesia. We also used ethyl chloride for freezing. Two types of ethyl chloride tubes were carried—one safe only for local use.

During one stage of the war, our supplies were very low and at one time we were down to about 25 pounds of ether and 100 tubes of ethyl chloride for local use. Under these conditions, we used our supplies very cautiously. When we used this kind of ethyl chloride as a general anesthesia, we had plenty of evidence that it was toxic. A few drops sprayed on gauze held over the nostril would be followed by immediate and rather profound anesthesia. Because of our situation we were obliged to use this supply for several months and we were thankful to have no fatalities from it.

Sodium Pentothal: Our experience with sodium pentothal anesthesia was confined to about 50 cases during the last two years. We found considerable help in the degree of muscular relaxation it afforded and on the whole, it was very acceptable. Our technique was to inject slowly and intravenously, an aqueous solution while the patient was counting and to stop as soon as the counting became irregular. This usually occurred after giving from 150 to 300 mg. If it was evidently too light an anesthesia before our operation was completed, we would add another 50 to 100 mg. Occasionally, the first few minutes of anesthesia would be associated with very light respiration. I don't have statistical analyses of our cases here in America. I understand that our records in China haven't survived the Japanese occupation.

Carbon Monoxide: Sometimes, we would be called to assist in operations at smaller outlying hospitals. One such instance was on a trip to Liling, a day's journey away. One of our medical school graduates was running a co-operative hospital there in connection with the Evangelical Mission and the county

government. He had a patient with an extensive contraction at an elbow joint due to a burn about 12 years previous. He also had a man with extensive neoplasm involving the abdomen.

It was in February and the operating room was heated with an open charcoal burner. After about 15 minutes during the operation on the abdominal case, the instrument nurse acted a little dizzy, had a few epileptiform movements, and then lost consciousness. At the time, I wondered whether the nurse was subject to epilepsy. We proceeded with the operating. However, in a few minutes, I dimly realized it was very hard for me to direct my own hands and, then, that I was losing consciousness. I had just enough presence of mind to lie down on the operating floor, flat on my back with my hands on my chest.

The next thing I knew I was still lying flat on the floor, laughing heartily. There was a cold wind blowing through the room. What had happened was that we had been breathing carbon monoxide fumes from the charcoal burner. The charcoal was not well seasoned and the room had been shut tight. When I passed out also, Dr. Chang, the head of the hospital, had thought of the possibility of carbon monoxide fumes and had opened the window. I lay still until I felt perfectly clear and, then, I was able to get up and finish the operation without further difficulty.

Now that the war is over, we look forward to rebuilding an adequate service at Changsha. As transportation lines open up and business becomes re-established, we hope to include some of the newer gas anesthesias, limited, of course, by availability and cost of supplies.

A Medical Platform: The growth of a modern medical profession in China calls for the development of sound adequate ethics—the kind of thing we might call a "medical platform," a well-thought-out program. In China, there are two distinct tendencies which are more or less opposed to each other. The first grows out of the family system and a natural tendency to provincialism. It tends to build a strong loyalty to the institution, or toward that part of the institution in which one works. It tends to develop a real responsibility for the particular part of the job in which one is involved. In small hospitals, it usually includes the whole hospital as a unit. In larger hospitals, there is a great tendency for each group to flock by itself: the nurses by themselves, the administrative staff by themselves, and the doctors by themselves, etc.

The other tendency is to plan one group which will include all varieties of medical personnel within one large medical society: doctors, nurses, pharmacists, etc. Toward this type of organization, leaders have given much time and thought in seeking sound medical ethics. One plank is high professional standards in the training given for various medical degrees. Another is building up a sound medical literature, a third, scientific research—research carried on with absolute integrity to truth. An equally important consideration is efficient application of these proposals, so that the service in health and sickness may be beneficial to the whole community. This is a vision large enough to unify the whole field of medicine. It makes service to the whole of society its goal. It is a tremendous challenge, for the opportunities and the need for medical work in China are so extensive and the difficulties of appli-

cation in any adequate way are so great, that without clear vision, real progress will be very slow indeed. To work, it must pass beyond the stage of a fine ideal to that of a well-developed plan. Nothing less than a full measure of devotion on the part of the profession can succeed in bringing any plan of such proportions to fruition. Many in modern China realize very keenly the great importance of health for the nation. The modern medical profession has special opportunities for contributing to the future welfare of China. It has needful information, technical experience, and should have the will to apply them.

We hear a lot about democracy these days in China as well as in America. Democracy can be a dividing, weakening force, or a uniting, building force. When democracy is interpreted as "Freedom to do as I please," it often is believed to imply freedom from simple virtues and ordinary responsibilities. It can become a narrow, self-centered philosophy of life, merely camouflaged by the term "democracy." When democracy is also taken to mean "Freedom to fight for my rights and my special interests," it leads to friction and a break-up of established practice, whether in an office, or hospital, or a profession.

Democracy's real significance lies in the privilege and responsibility of the individual to share in the government of a whole community, both as to planning and execution. It is responsibility with power. The world at present is not working very well and a new consideration needs to be emphasized: a dedication to clear thinking and united action for the good of all, faith so great that it will not be surplanted by fears of personal security, or dropped from sheer discouragement or inertia.

Who will give it the necessary leadership? There is nothing that attracts interest more than a good working demonstration. I see in the medical profession a wonderful opportunity for leadership in such a new emphasis in the life of our society. Our whole profession is based on service for all types of people. Whatever their political party, type of work, or race, people still maintain contact with the medical profession. If it shows them that doctors and nurses, as individuals and as a group, have a philosophy of life that really works, that isn't self centered, that its thinking is in terms of the nation and of society, what a contribution it can make! May the Chinese medical profession, as it grows, be the embodiment of this larger vision!

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AMERICAN ASSOCIATION OF NURSE ANESTHETISTS
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Pharmacology of General Anesthetics

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The word "anesthesia" means the inability to appreciate sensations. Thus, strictly speaking, anesthesia refers to a loss of function of the sensory part of the nervous system, but in practice, the term has been extended to include motor paralysis as well. Anesthesia is a reversible process, consisting of only a temporary depression of nervous tissue, a full return to normal function occurring shortly after the anesthetic is discontinued.

Anesthetic drugs have a high affinity for lipoids and are taken up rapidly by nerve cells, producing a depression of the metabolic processes by decreasing the permeability of cell membranes. The exact mechanism by which this decreased permeability is brought about is not known. Many theories to explain it have been offered. It is probably a physical phenomenon rather than a chemical one, for various anesthetic agents belong to widely separated types of chemical compounds and are, chemically, rather inert. Some are simple inorganic compounds, like nitrous oxide and magnesium ions, some are fairly simple organic compounds, like chloroform and ether, and others are more complex organic compounds like the barbiturates. What appears to be the most likely explanation, at present, for the action of anesthetics is that they produce a waterproofing of cell membranes by a combination of physical factors, including a greater solubility in lipoids than in water and a lowering of surface tension.

The concentration of the anesthetic in the central nervous system determines the depth of anesthesia. As the concentration increases, a progressive paralysis of various parts of the central nervous system develops. The cerebrum is the most sensitive, becoming depressed first, then, the basal ganglia and cerebellum; thirdly, the spinal cord, the sensory functions being depressed earlier than the motor functions and, lastly, the medulla with its vital cardiac, vasomotor, and respiratory centers. This progressive paralysis of the central nervous system produces successive depths of anesthesia which are known as the "stages" of anesthesia. The stage of analgesia corresponds to early depression of the cerebrum; the stage of surgical anesthesia, to depression of the spinal cord; the toxic stage to depression of the medulla. In the stage of medullary paralysis, the respiratory center becomes paralysed first, then the vasomotor center, and finally, the cardiac center.

Read at the Tri-State Nurse Anesthetists Assembly, May 1946, Chicago, Ill.

Therefore, if the anesthesia has been pushed to the point of respiratory arrest, artificial respiration will usually revive the patient, for the heart is still functioning. However, with some anesthetics, the circulation is so depressed by the time respiratory paralysis occurs, that artificial respiration may be of little use.

As mentioned above, the depth of anesthesia is determined by the concentration of the anesthetic in the central nervous system. This, in turn, depends on the concentration in the blood. With inhalation anesthetics, the concentration in the blood varies directly with the concentration in the mixture being breathed and the minute volumes of respiration. Thus, by increasing or decreasing the concentration of the anesthetic in the breathing mixture, the depth of anesthesia may be increased or decreased. The period of progressive increase in anesthetic concentration in the central nervous system, until the desired stage of anesthesia is reached, is known as the induction period. Maintenance of anesthesia is then obtained by maintaining an equilibrium between the concentration of the anesthetic in the breathing mixture, in the blood, and in the central nervous system. The inhalation anesthetics are not metabolized by the body and are excreted from the body largely through the lungs. Therefore, when a closed system is used and when equilibrium has once been established at the desired level of anesthesia, only very small amounts of the anesthetic need be added to maintain anesthesia. When the anesthetic is discontinued, the patient goes through the same stages of anesthesia as during induction, but in reverse order.

Elimination of inhalation anesthetics from the body occurs mostly via the lungs, only small amounts being excreted through the skin, kidneys, and body fluids. The speed of elimination varies with the duration of anesthesia and with the drug used. In general, the longer the induction period of a particular anesthetic, the slower the rate of excretion. Also the more fat a patient has, the slower will be the rate of excretion (1). The major part of the anesthetic disappears from the body within a few minutes after administration is discontinued, but several hours are required for complete elimination.

Many substances are used as general anesthetics. Some readily produce any desired depth of anesthesia. Others are incapable of producing deep surgical anesthesia unless used in such high concentrations that anoxemia also develops. Thus, there is a difference in the potency of various anesthetics. Also, different anesthetics have different affects on various functions of the body.

Most general anesthetics are either liquids which vaporize, or are gases. Such substances are administered by inhalation. Some general anesthetics, however, are crystalline compounds to be dissolved in a suitable solvent and administered intravenously, as the barbiturates, or by rectum, as avertin.

Ether is a volatile liquid which vaporizes at 93°F. and whose vapors are twice as heavy as air. Explosive concentrations of ether and air, or oxygen, are formed over a wide range (1.85-36.5 per cent ether in air, 2.1-82.5 per cent in oxygen).

This drug is a powerful anesthetic and may produce any desired depth of anesthesia. The circulation and respiration remain essentially normal during prolonged anesthesia, unless the deeper

planes are reached. Ether actually stimulates respiration in the lighter planes, increasing minute volume. Excellent muscular relaxation is afforded, partly due to the fact that ether has a curare-like action(2).

The effect of ether on other body functions includes a mild decrease in both liver and kidney function, with return to normal in about 24 hours. Intracranial pressure is increased during lighter stages. The irritating properties of ether vapor cause a marked increase in salivation and bronchial secretions and also tend to predispose to the development of postoperative respiratory infections, nausea, and vomiting.

Because of the relative absense of deleterious effects of ether on the circulation, respiration, and liver, and because of the excellent muscular relaxation and opportunity for adequate oxygenation, ether is a suitable anesthetic for long operations and for most any type of operation, except for those involving the central nervous system. The chief disadvantages of ether are the prolonged induction period and the relatively high incidence of postoperative complications.

Chloroform is another volatile liquid, vaporizing at 142°F. The vapors are four times as heavy as air. It is not inflammable or explosive.

Chloroform is also a potent anesthetic, capable of producing any desired depth of anesthesia without anoxemia and affording excellent muscular relaxation. However, the margin of safety is less than that of ether. Also, this anesthetic agent has a definite deleterious effect on circulation, producing a 50 per cent fall in blood pressure after one hour and 65 to 75 per cent fall (shock) in two and a half hours. This fall in blood pressure is due to several factors: first, a dilatation of the splanchnic blood vessels; second, a slowing of the heart due to stimulation of the vagus nerve (this factor may be eliminated by atropine); and third, and most important, a direct toxic action on the heart causing a depression of the heart muscle. A sudden arrest of the heart may occur during induction anesthesia, when the concentration of chloroform in the blood going to the heart from the lungs is especially high. Chloroform also sensitizes the heart to the action of epinephrine, so that an injection of epinephrine during anesthesia with chloroform may induce ventricular fibrillation. Therefore, epinephrine should never be used as a circulatory stimulant in the presence of chloroform. In deep anesthesia, the respiratory center is paralysed before the cardiac center, as with the other anesthetics, but under chloroform, the circulation is so depressed by this stage that artificial respiration may not revive the patient.

Chloroform is also a well-known liver poison, causing fatty degeneration after prolonged administration. Similar injury may develop in the kidneys and heart, as well. Many late deaths (10 to 14 days postoperative) have been reported as the result of such tissue damage.

Because of its unpredictable effects on circulation and on the liver, chloroform is not recommended for operations lasting over one-half hour. The principal uses of chloroform are for the production of the stage of analgesia in obstetrics in the home and for emergency operations in houses where there is danger of explosion from other anesthetics.

Ethyl chloride is a volatile liquid

which vaporizes at 55°F. and whose vapors are twice as heavy as air. It forms explosive mixtures with air in concentrations of 4 - 14.8 per cent. The margin of safety with ethyl chloride is low and there is considerable overlapping of the concentrations necessary to produce the various stages of anesthesia. The induction period is extremely rapid and therefore, the warning signals are relatively indefinite. Ethyl chloride is very similar to chloroform in that it is injurious to both the heart and liver and therefore should be used only for short operations. The chief uses of this anesthetic are for minor surgery, especially in children, and for induction anesthesia to be followed by open drop ether.

Vinethene (divinyl ether) is another volatile liquid. Vaporization occurs at 82° F., the vapors being twice as heavy as air. It forms explosive concentrations with air or oxygen over a wide range (1.7 - 27 per cent in air; 1.85 - 85.5 per cent in oxygen).

Vinethene is a more powerful anesthetic than ether. The blood concentration required for surgical anesthesia in man is only about one-seventh that of ether, making vinethene about seven times more potent than ether. Any desired depth of anesthesia may be obtained with adequate oxygenation. Muscular relaxation is usually adequate, but not quite as complete as with ether. The margin of safety for vinethene is greater than for ether. Knowledge of this fact may tend to lull the anesthetist into an unwarranted sense of security. Actually, a patient requires closer watching under vinethene because of the rapidity with which he passes from one stage to another, due to the greater potency of vinethene. Also, the usual eye signs characteristic of the various depths of anesthesia are unreliable when vinethene is used. The best gauge of the degree of anesthesia is the character of respiration.

Differences of opinion exist as to the effect of vinethene on the cardiovascular system. Many workers believe no adverse effect occurs. Experiments in dogs by Robbins (3) indicate, however, that vinethene has a greater tendency to cause cardiac irregularities than ether or cyclopropane. Our rather limited experience in the laboratory on dogs with this anesthetic has demonstrated a definite tendency toward fall of blood pressure. Another disadvantage of vinethene is its possible toxic effect on the liver. Like chloroform, it may produce liver necrosis. However, animal experimentation has indicated that liver damage occurs only when there is an associated anoxemia. Therefore, it is important to maintain an adequate concentration of oxygen at all times. If cyanosis develops, one should switch to another anesthetic and administer oxygen and carbon dioxide. Vinethene is less irritative to tissues than ether, resulting in fewer postoperative complications. However, salivation during anesthesia is common, even after atropine.

Due to the possibility of liver damage, vinethene should not be used for long operations. Safe time limits are considered to be one-half hour, using the open-drop method or one and a half hours with a closed system. Contraindications include the presence of liver insufficiency and conditions in which an oxygen want may develop. Vinethene is especially suitable for short operations and may be used satisfactorily in children.

Nitrous Oxide is a gas which is not

explosive, but will support combustion. It is such a weak anesthetic agent that very high concentrations are required. Even with the highest concentrations which can be used clinically and with adequate premedication, the deeper stages of surgical anesthesia cannot be reached. No muscular relaxation is obtained.

The undesirable effects of nitrous oxide are due to the associated anoxia. Concentrations frequently used to induce anesthesia are 97-100 per cent. Thus, a severe anoxia develops quickly which causes a marked rise in blood pressure, increased heart rate, vasoconstriction, cyanosis, and deep and rapid respiration. If the concentration is cut back to 90 per cent nitrous oxide and 10 per cent oxygen, the effects of anoxia are cumulative and such a concentration should not be used for longer than about 30 minutes. However, with adequate premedication with the barbiturates, concentrations as low as 80 per cent may be used and continued more or less indefinitely, for adequate oxygenation is present.

Nitrous oxide is quite an innocuous agent, having little if any effect on the various organs of the body. For example, dogs kept under the anesthetic continuously for three days recover rapidly after the administration is discontinued and show no ill effects.

The chief use of nitrous oxide is for the production of the stage of analgesia, as in obstetrics and dentistry, where loss of consciousness and loss of cooperation of the patient are not desired. Concentrations as low as 35 to 40 per cent are sufficient for this stage and therefore, an adequate oxygen supply is available. Nitrous oxide is also useful as an induction anesthetic and for minor surface operations.

Ethylene is an anesthetic gas, quite similar to nitrous oxide in its actions, except that explosive concentrations are formed (range: 2.7-29 per cent in air; 2.9-80 per cent in oxygen). Ethylene is a relatively inactive anesthetic, but is slightly more potent than nitrous oxide. The deeper stages of anesthesia cannot be obtained unless another anesthetic, such as ether, is added. Some muscular relaxation develops, but is insufficient for abdominal surgery.

Circulation and respiration remain essentially normal. Ethylene is quite innocuous to tissues, as evidenced by the absence of irritation in the lungs, liver, kidneys, and heart. However, if anoxia is allowed to develop, tissue injury may result.

The uses of ethylene are many. Because of the lack of irritating properties and the ability of administering it without serious anoxia, there are few contraindications to its use. Therefore, ethylene is frequently the anesthetic of choice where the patient is a poor anesthetic risk.

Cyclopropane is the only potent anesthetic gas in common use today. Explosive concentrations are formed (range: 2.5-10 per cent in air; 2.5-63 per cent in oxygen). Because of its potency, much lower concentrations are used than are required with nitrous oxide or ethylene. Any desired depth of anesthesia is readily obtainable. Muscular relaxation and maintenance of blood pressure are satisfactory. The margin of safety is relatively high. Concentrations used to induce anesthesia vary between 15 and 25 per cent. Therefore, an adequate supply of oxygen can always be furnished.

Because cyclopropane is not irritating

to mucous membranes, a protective laryngospasm does not occur. Unlike other inhalation anesthetics, this gas does not stimulate respiration and therefore, no significant changes in respiration are noted until depression sets in. Thus, the character of respiration is not helpful in determining the earlier stages of anesthesia. Pulse changes are considered the best indication of over-dosage.

Cyclopropane has a tendency to cause cardiac irregularities. Arrhythmias and slowing of the heart rate, occurring with relatively low concentrations of the drug, are of vagal origin and may be abolished by atropine. Arrhythmias occurring with higher concentrations are thought to be due to anoxemia resulting from respiratory depression rather than from the drug itself. Robbins and Baxter (4) have shown that the concentration of cyclopropane in the blood of dogs may be increased 30 per cent over that required to produce respiratory arrest before irregularities occur. This is accomplished by giving artificial respiration with the anesthetic mixture, thus insuring an adequate oxygen intake. Drugs used for premedication also may affect the incidence of arrhythmias. Dogs premedicated with morphine, followed by cyclopropane, have a high incidence of irregularities, whereas it has recently been shown that the rhythm remains normal after demerol premedication (5). Cyclopropane, like chloroform, sensitizes the heart to epinephrine. Should a circulatory stimulant be needed, neosynephrine is the drug of choice (6).

Cyclopropane is an extremely useful anesthetic, being suitable for induction anesthesia, minor operations, or major operations of any duration. The chief contraindication for its use is the presence of cardiac irregularities. Postanesthetic complications are few.

Pentothal, the sodium salt of thiopentobarbital, is a crystalline compound which is dissolved in sufficient distilled water to make a 2.5 or 5 per cent solution for intravenous administration. The injection should be made slowly, for the rapid intravenous injection of otherwise harmless drugs may produce a rapid fall in blood pressure and even death. This is known as "speed shock."

General anesthesia is produced by the depressant action of this drug on the central nervous system, acting in the same general way as the inhalation anesthetics. The margin of safety is low, the dose necessary to produce anesthesia being 50 to 70 per cent of the fatal dose. The administration of any anesthetic by injection, or by rectum, means a loss in the flexibility of anesthesia. Only time will remove the drug from the body and, therefore, the depth of anesthesia cannot be readily lightened. If the dose given proves to be too much, nothing can be done except the application of heroic measures. Artificial respiration with carbon dioxide and oxygen is the best procedure. The administration of stimulants is also helpful, picrotoxin being the drug of choice in this case.

Respiration is markedly depressed by pentothal due to depression of the respiratory center. The anesthetist must constantly be on the watch for threatened respiratory failure. Relaxation of the pharyngeal muscles also occurs, allowing the tongue to fall back in the throat and interfere mechanically with breathing, so an open airway must always be maintained. Blood pressure is decreased, sometimes by as much as 40 mm. of Hg, due to a depression of the

vasomotor center. The heart rate increases as the blood pressure falls, but there is no disturbance in rhythm as long as oxygenation is sufficient.

Another complication to anesthesia with pentothal is the possibility of producing pulmonary edema. This predisposes to the development of postoperative pneumonia which carries a higher mortality rate when occurring after high doses of barbiturates than the usual run-of-the-mill pneumonias.

The usual eye signs are unreliable for determining the depth of anesthesia with pentothal. The pharyngeal and laryngeal reflexes are not abolished, hence the occasional development of laryngeal spasms after intubation.

Pentothal is rapidly destroyed by the liver, which fact accounts for the short duration of action. Degradation products are formed (one of which is probably pentobarbital) and are thought to account for the depression present after recovery from the anesthetic effect.

The recommended use of pentothal is for short operations only. However, due to the ease of administration and lack of cumbersome equipment needed, this drug was used extensively during the war for longer operations. Prolonged and extensive operations are possible if a good airway is maintained and if profound muscular relaxation is not required (7). Contraindications include circulatory disturbances, liver and kidney disease, extremes of age, pulmonary disease with decreased vital capacity, and respiratory obstructions.

A few figures comparing the above anesthetics may be of interest:

Margin of safety. This term refers to the ratio of the concentration of anesthetic required for respiratory paralysis to the concentration required for surgical anesthesia.

	Conc. in inhaled mixture as vol. % (12)		
	Chloroform	Ether	Cyclopropane
To maintain surgical anesthesia	1.6	4.0	13
For respiratory paralysis	2.0	7-10	43
Margin of safety	1.25	1.75-2.5	3.3

The margin of safety of cyclopropane therefore is greater than that of ether which, in turn, is greater than that of chloroform. The margin of safety of chloroform as compared with ether is even less than the above in terms of drops of choloroform, for one drop of chloroform weighs about twice as much as one drop of ether.

Thus the margin of safety of vinethene is intermediate between ether and cyclopropane.

	Conc. in blood as mg. % (dogs) (3)		
	Ether	Vinethene	Cyclopropane
Stage III_2	103	33	16
Stage IV	152	57	29.4
Margin of safety	1.47	1.73	1.84

Relative Potencies: The concentrations of anesthetic, as volumes per cent in the inhaled mixture, that are required to bring about the stage of analgesia without loss of consciousness afford a comparison of the relative po-

tencies of the commonly used gages.

	Conc. as vol. % (8)
Ethylene	25-35
Nitrous Oxide	35-40
Cyclopropane	4-6

If the concentration of cyclopropane be taken as unity, then that of ethylene is six and that of nitrous oxide is seven. In other words, cyclopropane is six times as potent as ethylene and seven times as potent as nitrous oxide.

Incidence of Fatalities: The relative safety in clinical use of various anesthetics can be roughly determined by the incidence of fatalities ascribed to the anesthetic agent.

	Incidence of deaths
Chloroform	1:3500 (not incl. delayed deaths)
Ethyl Chloride	1:3500
Local Anesthetics	1:5000
Ether	1:16,000
Ethylene	1:50,000
Nitrous Oxide	1:5 million

The deeper stages of anesthesia are ordinarily required to obtain good muscular relaxation. However, the use of curare, a drug causing temporary muscular paralysis, has enabled the anesthetist to level off anesthesia in plane 2 and yet obtain as good muscular relaxation, contraction of the intestines, and quiet breathing as occurs in spinal anesthesia (9). Thus, this drug is being used quite extensively to lower the amount of anesthetic needed, especially in conjunction with cyclopropane, and still afford the quiet, relaxed abdomen desired by the surgeon.

The amount of anesthetic required to induce a given state of anesthesia varies with the degree of premedication and with the condition of the patient. For example, in dogs, the concentration of cyclopropane required to abolish the wink reflex was reduced by 27 per cent with 2 mg. per Kg. of morphine, by 68 per cent with 8 to 10 mg. per Kg. of morphine. The barbiturates and demerol produce a similar reduction (10, 11). Hemorrhage and shock also reduce the amount of anesthetic needed. For example, loss of 20 cc of blood per Kg. in rabbits reduced the amount of pentobarbital required by 24 per cent. Loss of 25 per cent of blood volume in rats reduced the concentration of ether required to maintain anesthesia by 30 to 40 per cent (12). Only one-fourth to one-sixth of the usual dose of pentothal may be sufficient to induce anesthesia in shock in man (7). Therefore, of course, the anesthetist should be informed as to the amount and kind of premedication and the general condition of the patient. A knowledge of the many factors involved is essential to the administration of a satisfactory anesthesia.

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ABSTRACTS

It is the aim of this department to bring before readers recent publications which we believe are of practical value to the nurse anesthetist. We shall also call to your attention articles not so recently published that are of lasting interest. Some articles will be merely listed; others will be abstracted. Wherever practical abstracting will be done by the use of direct quotations. Contributions and suggestions will be most welcome.

TITLE: Seconal as a Basal Anesthetic in Children: A Preliminary Report

AUTHOR: Mary Frances Poe, M.D. and Mary Karp, M.D.

PUBLICATION: *Current Researches in Anesthesia and Analgesia.* 25:4 July-August 1946

ABSTRACTOR: Opal M. Schram, R.N.

"Basal narcosis is especially useful in the management of children undergoing surgical procedures. It spares the child the psychic disturbance attendant upon the trip to the operating room and induction of anesthesia. It reduces the amount of inhalation anesthesia as much as possible and it provides a period of postoperative rest and amnesia.

"The ideal sedative used should be rapidly destroyed and excreted, should have minimal effect on respiration and circulatory centers and should lend itself to extra-oral administration when necessary.

"Differences in resistance to anesthesia are largely differences in metabolic state. The level of metabolic rate represents the degree of reflex irritability and oxygen demand, and the starting point in induction of anesthesia. Probably the most frequent factor in producing a temporary preanesthetic rise in metabolism is apprehension and fear. Barbiturates are effective in lowering the increased metabolism by allaying the excitement.

"_____children between the ages of two and twelve exhibit higher metabolic levels than at other age periods and therefore tolerate larger amounts of anesthetic agents.

"The barbiturates possess some advantages as central nervous system depressants. When barbiturates are used to produce basal anesthesia, the oral or rectal route, rather than the parenteral route, is employed.

"_____Seconal (Sodium propyl-methyl-carbinyl-allyl barbiturate) a short-acting barbiturate, was chosen for trial as a basal depressant because of its quick action and its relatively short duration. It differs from barbital and phenobarbital in being detoxified and oxidized within the body with great rapidity, rather than being excreted in the urine.

"The basis for estimating dosage was the age and weight of the patient, but consideration was given to the child's general condition, body build and vigor, and nervous reactivity. Using Breslow and Poncher's recommended dosage of 0.1 grain (6.5 mg.) per pound of body weight, it was found that depression was inadequate in most cases. There-

fore, individual doses were increased and trial showed that a calculated dose of 0.14-0.15 grain (9.95 —9 mg.) per pound gave the optimum degree of narcosis. It was not advisable to use a total amount greater than 6 grains (390 mg.) in children six years of age or under. The dose was reduced in patients with anemia, lethargy or with decreased vitality. It was planned in all cases to use local infiltration, and the basal anesthesia was employed to provide a manageable patient. Whenever pentothal sodium or other supplement was anticipated, atropine sulfate was administered subcutaneously as part of the preoperative medication.

"Seconal was used in twenty-two neurosurgical and three ophthamological procedures in children, ranging in age from threee months to six years. More than half (sixteen) were for encephalography and for ventriculography. The majority of children in this group were in good physical condition —Five of these patients required no further anesthesia other than the local infiltration. Two children, both six years of age, received small supplementary intravenous doses of 2½ per cent sodium pentothal plus the inhalation of 50-50 nitrous oxide-oxygen. In the other nine nitrous oxide-oxygen was administered in a 75-25 proportion. In four cases, a smaller dose of seconal was used with atropine sulfate prior to endotracheal administration of ether for craniotomies and other intracranial operations. Under seconal and local anesthesia, cauterization of the choroid plexus was accomplished in a three year old child and a meningocele was repaired in a seven months old infant.

"Side-effects observed were a rise in pulse rate, some decrease in respiration and a fall in blood pressure. The increase in pulse rate was slight and could easily be attributed to lightness of the anesthesia state or to the epinephrine in the local solutions (8 drops of 1:1000 epinephrine were routinely used per 100cc. local solution). The respirations were decreased somewhat in amplitude, but no apnea occurred and the exchange was sufficiently adequate in all cases to prevent symptoms of anoxia. Blood pressure records were kept only on the major surgical procedures. In these cases, there was noted a fall of 10-20 mm. Hg. in the systolic reading, which occurred about 30-45 minutes after the sedative was administered. There was no significant change in pulse pressure. There was no evidence of late depressive symptoms. It has been used in patients with pathology of the central nervous system, cardio-vascular system and genito-urinary tract without untoward effects. No postoperative complications referable to the premedication occurred.

SUMMARY

"Basal narcosis provides a manageable child for surgery. Seconal has been used for this purpose with gratifying results in twenty-five cases."

TITLE: Fatal Fat Embolism: A Case Report

AUTHOR: Ernest A. Doud, M.D., and E. A. Rovenstine, M.D., New York, N.Y.

PUBLICATION: *Anesthesiology,* Volume 7, No. 3, May 1946

ABSTRACTOR: Catherine Gallagher, R.N.

Since fat embolism does not usually cause death until the third postoperative

day or later, a report of this proven death from fat embolism during cyclopropane anesthesia is of interest.

The highest incidence of fat embolism is to be found in the fourth decade. These accidents rarely occur in children because up to the age of 14 there is an insufficient amount of fat in the bone marrow, and it consists primarily of viscous palmitin and stearin and a small quantity only of the more fluid olein. Males are affected in a ratio of eight to one. Speed believes that those addicted to alcohol are predisposed more than nonalcoholics because of the instability of the fat emulsion in the serum produced by the frequent dilution with the fat solvent. Simonds found that etherized dogs were more susceptible to fat embolism than those anesthetized by nonfat solvents. Bisgard and Baker, however, showed that ether had little or no beneficial influence upon embolization of fat and, if at all, only during anesthesia. The vast majority of embolisms occur three or more days postoperatively and ether could have no effect upon the fat that enters the blood stream at that time.

Case Report: The subject of this report was a 55 year old, well-developed, white woman whose structures were older than her age. An open reduction of an intracapsular fracture of the upper end of the neck of the left femur and insertion of an autogenous bone peg was proposed. The temperature was 101 F.; pulse rate 88, and respirations 20 per minute. The blood pressure was 158/100; erythrocyte count was 4,100,000 and hemoglobin 80 per cent. The patient had a questionable cardiac valvular lesion, subsiding pharyngitis, and extensive, untreated varicosities of the extremities.

Morphine sulfate, 0.008 gm., and scopolamine hydrobromide 0.0003 gm., were given hypodermically one hour preoperatively. This premedication was satisfactory and the induction and maintenance of cyclopropane anesthesia were uneventful for forty-three minutes. During this time, the blood pressure remained close to 150/100, the pulse rate decreased from 116 to between 80 and 90, and the respirations ranged from 18 to 22 per minute. Suddenly the blood pressure and pulse rate could not be elicited and the respiratory rate increased to 36. It was evident that the patient was in profound circulatory collapse. She was placed in a modified Trendelenburg position, and the breathing bag was repeatedly emptied and refilled with oxygen in an attempt to wash the anesthetic agent from the patient's tissues.

Twelve minutes after the onset of circulatory collapse, an oral endotracheal airway was inserted, and dilution of the agent was continued. No pulse or blood pressure reading could be obtained, but irregular gasping respirations continued at a decreasing rate for approximately thirty minutes. During this entire period, artificial respiration was performed. An infusion of 5 per cent glucose in normal saline solution was started seventeen minutes after the onset of shock and epinephrine was injected into the infusion tubing. Thirty minutes after the onset, all respiratory effort ceased and the patient was pronounced dead on the table fifteen minutes later. It was interesting to note that the respirations continued for a long period of time after the circulation apparently had stopped.

Necropsy disclosed pulmonary fat

embolism. Branches of the pulmonary artery in both lungs were occluded. An analysis of the lung secretions and the urine disclosed the presence of fat. The heart was moderately distended.

There is no known treatment for this catastrophe. Atropine, 0.0006 gm., and papaverine, 0.30 gm., may be given intravenously if they are immediately available to counteract the autonomic reflexes from the affected lung. The literature is replete with prophylactic measures. Among those most frequently mentioned are: early application of a tourniquet when feasible and a slow release after early immobilization and reduction, avoidance of unnecessary and rough handling, the early treatment of shock if it occurs, and the use of an electrical saw instead of a chisel during open reduction.

TITLE: Convulsions During Ether Anesthesia Controlled by Curare (Intocostrin)

AUTHOR: Irving Greenfield, M.D., Philadelphia, Pa.

PUBLICATION: *Anesthesiology,* Volume 7, No. 3, May 1946.

ABSTRACTOR: Catherine Gallagher, R.N.

Anesthetic convulsions are serious because of the high mortality rate (18-50 per cent) and the prospect of residual neurologic changes which may persist postoperatively in those surviving. It is important that the occurrence of these convulsions is recognized and means for controlling them immediately instituted. It is the intention in this paper to present one case and its treatment with intocostrin.

Case Report—The patient had been injured at 8 PM. He arrived at the hospital at 5 AM the next morning, apparently in good condition, and at 9:30 AM was taken to the operating room with a diagnosis of a penetrating wound of the right lateral iliac region. Roentgenologic examination was not wholly satisfactory in confirming clinical impression of an intra-abdominal penetration.

Premedication consisted of morphine sulfate, 1/6 grain, and atropine sulfate, 1/100 grain, intramuscularly, thirty minutes before induction of anesthesia. The blood pressure was 120/80. Pulse was 90, and the respirations were 20 before operation.

The patient was anesthetized using nitrous oxide, oxygen, ether with carbon dioxide absorption technique. Induction was uneventful with only a slight excitement stage. He was turned into a left Sims' position for debridement of the wound and the tract was followed down. An abdominal exploratory procedure was indicated when it was demonstrated that the fragment had penetrated the peritoneal cavity. The patient was then placed on his back and the abdominal exploration started. To overcome moderate laryngospasm, intubation was carried out through the mouth, using a number 38 Magill tube under direct vision. The pupils were dilated, and some eyeball activity was present. There was good activity of the intercostal muscles.

One hour and thirty minutes after the start of the anesthesia, the patient was sufficiently relaxed, but because of his rapid jerky breathing, the liver and the adjacent abdominal contents obscured the surgeon's exploration of the posterior aspect of the duodenum.

Breathing was definitely diaphragmatic in character; the intercostal muscles were paralyzed and a prominent tracheal tug was evident. De-etherization with oxygen was started immediately. At the same time it was noticed that there were slight muscular twitchings about the eyelids. This rapidly progressed upward to include the forehead. The face mask was removed and it was noted that the muscles about the mouth and nose were also starting to twitch. The left arm, which was extended and fixed to an intravenous arm-board, was soon involved. First, the muscles of the left fifth finger started to contract and relax slowly. This soon spread to involve the entire left hand and within a very few seconds the entire left forearm and arm were included in this neuromuscular phenomenon. The feet were quickly undraped and it was noted that the toes were also twitching. Within a relatively short time the entire trunk was involved and soon the entire body was in a state of clonic spasm.

The duration of each spastic seizure was about two seconds and then a period of relaxation would follow which lasted for about four seconds. Anesthesia was immediately discontinued. Oxygen under slight positive pressure, with frequent emptying of the bag, was started and new soda-lime was inserted into the system. Because of the extremely deep anesthesia, the anesthetist hesitated to give pentothal. The color of the blood was normal, and the blood pressure — 146/60, pulse — 120, and respirations about 50. The temperature was checked at this time and found to be 98° F. axillary. De-etherization was continued for about five minutes, and then sodium pentothal, 5 cc of a 3.5 per cent solution, was given very rapidly. Additional pentothal in 2 cc doses was then injected every ten seconds, until 30 cc (1 gm.) had been given over a five minute period. It was then decided to discontinue any additional barbiturate, as there was no indication that the patient's condition was improving. The convulsions increased in frequency and severity, and at times it was necessary for three people to hold the patient on the table. The endotracheal tube, which was partly filled with mucus, was removed and another reinserted.

Twenty minutes after the onset of the convulsions and ten minutes after the pentothal had been given, it was decided to give the patient 1 cc (20 units) of intocostrin intravenously. The dose was given in approximately ten seconds. Within one minute the convulsions suddenly stopped. The patient went into apnea which was easily controlled by slight manual pressure on the bag. The blood pressure level and pulse remained good. Spontaneous respirations returned in about fifteen minutes. At first they were shallow, rapid and jerky, but they gradually returned to a more normal type. The surgeon was able to complete his exploratory procedure. The operation was finished at 12:30 PM and the patient was awake at 3:30 PM. The postoperative course until the tenth day was uneventful. At that time he was discharged from the hospital.

Comment—The probable cause of the convulsions was the prolonged, deep anesthesia, with its resultant anoxia. An intravenous barbiturate was not used immediately because of the danger of additional respiratory depression. When sufficient ether had been removed from the lungs, pentothal was used, but the

convulsions did not cease. The administration of intocostrin produced prompt cessation of the clonic spasms and the musculature became flaccid. Apnea was not disturbing, for as long as good circulation was maintained with artificial respiration, it was felt that within a short time spontaneous respiration would return. After fifteen minutes of artificial respiration, the patient was able to breathe spontaneously.

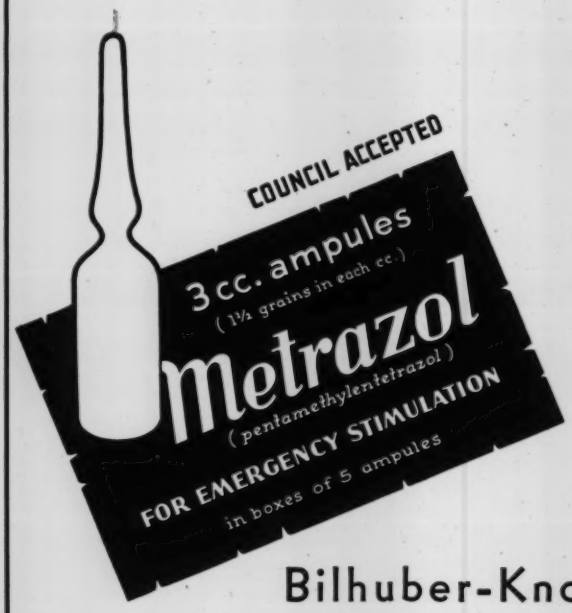
CONCLUSION

This is the first time, according to the available literature, that curare has been used under such circumstances.

Correction

The article "Curare and the Anesthetics," by Dr. Stuart C. Cullen, University of Iowa, Iowa City, Iowa, in the August issue of THE JOURNAL starting on page 20, was incomplete as presented in that the forepart of the paper inadvertently was printed on pages 14 and 15. Likewise, the first three lines on page 14 were the conclusion of Dr. Louis Levy's article on "Anesthesia in Orthopedic Surgery." We regret the circumstances of these typographical errors and express appreciation to the authors and readers for their patience in this instance.

A correction is also made in the signature of the author of "Indications for the Use of Oxygen", appearing in the August 1946 issue. It is: Mrs. Elizabeth Coleman Blanchard, rather than Mrs. Elizabeth Blanchard Coleman as previously printed.



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The patients come back and want the same thing."
Nitrous Oxide said, "No, I make people sing.
They laugh, dream and talk, and wake up with a bing."
"Nice talking," said Cyclopropane, "but not true.
If taken the straight way, your patients get blue.
Use me and you'll find your patients are pink,
All flushed in their color, they then start to blink."
"Why, I make them flush," chimed in Oxygen,
"But you get the credit for my coming in."
"Come down off your perch," said Carbon Dioxide,
"For I make them breathe and I'm e'er at your side."
Ethylene then decided she'd something to say,
But the rest all agreed that her patients get grey.
"I'll throw out my chest, good old standby me,
If you'll keep them counting at 'One, two and three.'
I'm old and reliable, cheap, as you know,
I'm Ether, your old friend, drop in for a show.
I dance and I bubble, and that's not a gag.
I relax patients nicely, it's all in the bag."
"What's this that I hear?" asked Chloroform with might.
" 'Tis I have the power that goes out like a light.
I'm old, as you know, having served many years,
But they say that I'm dang'rous, having horrible fears."
"Well, I'm Vinethene, just betwixt and between;
I evaporize quickly, without being seen.
It's a simple and easy, old-fashioned task
To drop me the open way down on the mask.
They go to sleep easy, just hold up the chin,
Then give plenty of air and they'll wake up and grin."
" 'Rear Adm'ral' some call me. Avertin's my name.
I relieve their excitement and quiet their pain.
Though only a basal, with something to smell,
Folks say that I'm pleasant and do my work well."
Ethyl Chloride, "They say that I'm a cold breeze,
That I've had my day and that I used to freeze,
That folk used to smell me, that I was so quick,
And now they all tell me I sure do look sick!"
"Well, I'm very useful, though seldom I'm used,
But here, just in case that you might get confused.
For I work when you're through, Helium is my name
And during the war years I came into fame.
Down into the lungs I carry my load
That's my destination, the old rocky road."
The floor was all cleared, the Airway adjourned,
Not having spoken before, 'twas her turn—
"I'll take the stand," she proudly appeared,
"Less said, more done," and then disappeared.
"Oh, dear!" said the Anesthetist, "I'm sometimes perplexed.
With so many anesthetics, Pray what will be next?"

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HENNING, Jennie, St. Joseph's Hospital, Flint, Michigan
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HENSLEY, Pauline, Baylor University Hospital, Dallas 1, Texas
HINTERTHUER, Mrs. Marjorie B., 1441 No. Franklin Place, Milwaukee 2, Wisconsin
HOOD, Hazel, 1727 - 70th Ave., Oakland 3, California
HOOPER, Dorothy H., Black Hawk Road, Beaver Falls, Pennsylvania
HUGHES, Helen M., 1176 Delta Road, Springfield, Ohio
*HUMMER, Shirley, Muhlenberg Hospital, Plainfield, New Jersey
HUNTER, Kathleen M., 790 Congress St., Portland, Maine
HYMERS, Jean A., 225 West 22nd St., Erie, Pennsylvania
*JOHNSON, Catherine L., 91 North Kensico Ave., White Plains, New York
JOHNSON, Irene, 28 Vesper St., Portland 3, Maine
JOHNSTON, Alice F., St. Joseph Hospital, San Francisco, California
JONES, Mrs. Bette W., 1720 Arlington Ave., Des Moines, Iowa
JONES, Mrs. Virginia A., The Grace Hospital, Detroit 1, Michigan
KENNEDY, Elizabeth V., St. Francis Hospital, Honolulu 3, T. H,
*KERSEY, Kathryn J., 31 South Russell St., Boston, Massachusetts
LABRECQUE, Lucille E., Frisbie Memorial Hospital, Rochester, New Hampshire
LAIL, Mary C., 2906 Davidson, Charlotte, North Carolina
LAMB, Etta M., Deaconess Hospital, Grafton, North Dakota
LAWRENCE, Matie L., St. Joseph Infirmary, Atlanta, Georgia
*LEGG, Mrs. Marita G., 10 Cochato Road, Braintree, Massachusetts
LEWIS, Mrs. Loraine W., 618 Linden, Portsmouth, Virginia
LEWIS, Mary F., Shannon Memorial Hospital, San Angelo 1, Texas
*LONG, Marie M., North Carolina Baptist Hospital, Winston-Salem, North Carolina
LOONEY, Mrs. Mable B., 517 Jefferson St., Stambaugh, Michigan
*MARKEL, Buenaventura I., Mt. Sinai Hospital Nurses Home, Cleveland 6, Ohio
MARTIN, Bonnie L., Box 1443, Anchorage, Alaska
MATERNA, Kathryn, Brooklyn Hospital, Brooklyn, New York
MAZUR, Sophia J., 3602 Caniff Ave., Hamtramck 12, Michigan
*MAZZURRA, Thomasine C., Jewish Hospital, Philadelphia 41, Pennsylvania
*McMASTER, Jean E., Starling-Loving University Hospital, Columbus 10, Ohio
*MEISSNER, Mrs. Lola B., 25 Eastwood, Tuscaloosa, Alabama
MIKULA, Mrs. Ann H., Gritman Memorial Hospital, Moscow, Idaho
MILLER, Elizabeth J., Kern General Hospital, Bakersfield, California
MILLER, Ruth E., South and Vine, Box 581, Carmichaels, Pennsylvania
MIN, Bessie Hai Sun, Queens Hospital, Honolulu 39, Hawaii
*MOFFITT, Eileen M., Box 43, Beechwood Road, R. R. No. 1, Covington, Kentucky
*MORSE, Mrs. Daisy D., Caripito Hospital, Caripito, Venezuela, South America
MORTON, Mrs. Lelia M., Children's Hospital, Vincent Hall, Cincinnati, Ohio

MUSTATIA, Anna J., St. Francis Hospital, Pittsburgh 1, Pennsylvania
NAGLE, Agnes M., St. Elizabeth's Hospital, Elizabeth, New Jersey
OBRADOVIC, Angeline, 5908 West 63rd St., Chicago 38, Illinois
OGDEN, Jessie V., Camden Hospital, Camden, Arkansas
OTTMER, Agatha A., 18 Everett St., Fond du Lac, Wisconsin
OVERTON, Helen M., 1050 Franklin St., San Francisco 9, California
*OWENS, Elizabeth C., 907 Lee St., Bloomington, Illinois
PEAKE, Mrs. Lillian T., Box 1885, Prescott, Arizona
PERICOLA, Marie, Beth Israel Hospital, New York 3, N. Y.
*PERRY, Bonnie D., Barnes Hospital, St. Louis 10, Missouri
*POSO, Mary C., 196 Roslyn St., Rochester, New York
RAMSEY, Yvonne M., Parkland Hospital, Dallas 4, Texas
*RANEY, Mrs. Catherine H., 1901½ Lombard, Everett, Washington
RHINE, Mrs. Irene A., Suburban General Hospital, Pittsburgh 2, Pennsylvania
RICHARDS, Evelyn A., 95 St. Lawrence St., Portland 3, Maine
RIDINGS, Mary M., 400 Arnold, Greenville, Mississippi
RODE, Margaret M., St. John's Hospital, Fargo, North Dakota
ROE, Helen, Clinic Hospital, Bluffton, Indiana
ROLWING, Miriam D., Leila Y. Post Montgomery Hospital, Battle Creek, Michigan
ROOT, Edith E., Bradford Hospital, Bradford, Pennsylvania
*RUDY, Cathryne, 729 So. Bernard, Spokane, Washington
*RUSSELL, Mrs. Neva H., Tacoma General Hospital, Tacoma, Washington
ST. CLAIR, Mrs. Irene C., 1707 - 8th St., Wichita Falls, Texas
ST. JOHN, Mrs. Doris T., Parkland Hospital, Dallas 4, Texas
SCHNORE, Reta B., Sacred Heart Hospital, Eugene, Oregon
SEDAR, Emily F., 316 South Beech St., Mt. Carmel, Pennsylvania
SENEFF, Ellen J., 1213 Maple St., Turtle Creek, Pennsylvania
SHARP, Evelyn A., 436 So. 40th St., Philadelphia 4, Pennsylvania
SILHAVY, Mrs. F. Jean G., Fairview Hospital, Cleveland, Ohio
SISTER ADELLA, St. Clement Hospital, Red Bud, Illinois
SISTER JOHN FRANCIS, St. Joseph Hospital, Flint, Michigan
SISTER M. ANNELLA, Our Lady of Consolation Hospital, Cottonwood, Idaho
SISTER M. CASIMIR, St. Joseph's Hospital, San Francisco, California
SISTER M. FLORENCE, Saint Rose Hospital, Great Bend, Kansas
SISTER MARY HYACINTH, St. Cloud Hospital, St. Cloud, Minnesota
SISTER MARY MARKITA, St. Joseph's Mercy Hospital, Fort Dodge, Iowa
*SISTER M. OSGITHA, Holy Trinity Hospital, Graceville, Minnesota
SISTER MARY SEBALDA, Our Lady of Lourdes Hospital, Norfolk, Nebraska
SISTER M. STANISLAUS, St. Vincent's Hospital, Taylorville, Illinois
SISTER MARY VITA, St. John's Hospital, Springfield, Missouri
STAHL, Martha E., 938 No. 68th St., Wauwatosa 13, Wisconsin
*STEFFE, Clesta V., West Penn Hospital, Pittsburgh 24, Pennsylvania
STEPHAN, Clara D., St. Michael's Hospital, Newark, New Jersey
STOCKDALE, Mrs. Bernice, Grace Hospital, Detroit 1, Michigan
STRIMPLE, Mrs. Evelyn B., 1315 Taylor St., Amarillo, Texas
STUTE, Helene J., Evangelical Deaconess Hospital, Milwaukee, Wisconsin
TAPPENDEN, Shirley, 3040 West North Ave., Chicago 47, Illinois
THIEL, Ann L., St. Francis Hospital, Litchfield, Illinois
THOMPSON, Margaret M., 5433 No. Mervine St., Philadelphia, Pennsylvania
THOMPSON, Mrs. Mary V., 626 Monroe St., Bonneville Park, Ogden, Utah
TILLER, Frances L., U. S. Marine Hospital, Norfolk 9, Virginia
TRZCINSKI, Florence M., Presbyterian Hospital, Newark 7, New Jersey
TURKAL, Helen J., Providence Hospital, Detroit 8, Michigan
TURNER, Audrey M., 1300 W. Cannon, Fort Worth, Texas
*VAN DYCK, Margaret R., Evangelical Deaconess Hospital, St. Louis 10, Missouri
VON KONSKY, Mrs. Opal M., 203 South 19th St., San Jose 12, California
WALK, Mrs. Ada F. Youtsler, Emanuel Hospital, Portland, Oregon
*WALLACE, Margaret M., Sweetwater Hospital, Sweetwater, Texas
WELSH, Bernece L., Jefferson Hospital, Birmingham, Alabama
*WELTMAN, Miriam A., Roosevelt Hospital, New York 19, New York

WHEELER, Mrs. Elizabeth B., 331 E. Penn St., Bedford, Pennsylvania
WHITE, Mary J., 711 Reynolds, Fort Worth, Texas
*WILLIAMS, Rebecca E., Medical College of Virginia, Box 201 Hunton Hall, Richmond, Va.
WILLMORE, Ada R., 1009 So. Marion Road, West Frankfort, Illinois
WITTMER, Alma R., Mercy Hospital Nurses Home, Pittsburgh 19, Pennsylvania
WOELFFER, Betty J., St. Vincent Infirmary, Little Rock, Arkansas
WOLK, Blanche, Northern Liberties Hospital, Philadelphia, Pennsylvania
ZOOK, Margaret L., Lankenau Hospital, Philadelphia 30, Pennsylvania

Annual Report of the Treasurer

To Board of Trustees of the American Association of Nurse Anesthetists

STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS
SEPTEMBER 1, 1945 TO AUGUST 31, 1946

Cash in Bank September 1, 1945		$12419.02
RECEIPTS, Sept. 1, 1945 to Aug. 31, 1946 inclusive		
Application fees	$ 862.00	
Dues, Association membership	28321.58	
Dues, Institutional membership	1025.60	
Income from sale of advertising space	2286.24	
Income from sale of classified advertising	168.00	
Pins sold	960.10	
Sleeve emblems sold	186.00	
Institute fees	1530.50	
Examination fees	5736.50	
Penalty fees	126.00	
Contribution to Educational Fund, by Jewel Fink	8.00	
Bank interest	122.64	41333.16
		$53752.18
DISBURSEMENTS, Sept. 1, 1945 to Aug. 31, 1946 inclusive		
Transfers to State Associations	$ 1093.25	
Transfers to State Associations, Institutional dues	135.00	
Contribution to American Hospital Association	540.00	
Accounting and secretarial service	10698.61	
Postage	809.94	
Telephone and telegraph	153.95	
Office supplies and printing	1058.92	
Publishing Journal	6123.66	
Postage, Journal	149.50	
Envelopes for Journal	97.50	
Addressograph expense	263.41	
Commissions to Editor for advertising	114.75	
Salary Editor of Journal	900.00	
Bonding personnel	27.92	
Transfers to Trust Fund Savings Account	591.30	
Pins purchased	734.30	
Sleeve emblems purchased	340.00	
Office equipment	244.36	
Office equipment repaired	4.65	
Books and periodicals	29.74	
Institute expense	1632.65	
Schools of Anesthesiology Assembly	15.85	
Representation at state and regional meetings	111.87	
Membership, American & Illinois Hospital Associations	30.00	
U. S. Savings Bonds, Series "F"	9990.00	
Legal services	25.00	
Board of Trustees expense	2205.52	
Special Washington Committee expense	3.75	
Planning Committee expense	6.70	
Anesthesia Records Committee expense	6.65	
Public Relations Committee expense	9.45	
Postwar Planning Committee expense	98.45	
Finance Committee expense	12.75	
Committee on Education expense	1.50	

Committee on Approval of Schools expense	132.72	
Survey of Schools expense	66.47	
Curriculum Committee expense	91.95	
Educational Exhibit Committee expense	25.00	
Examination program expense	1616.27	
Convention expense	161.24	
Petty Cash increase, Executive Offices	10.00	
Miscellaneous expense	998.79	
Withholding tax paid	1427.70	
Withholding Tax Reserve	1312.50	$40578.54
Cash in Bank August 31, 1946		$13173.64
Consisting of the following:		
Cleveland Trust Co. Savings Account No. 106581 $1019.02		
Central National Bank Savings Account No. D16133 984.05		
National City Bank Savings Account No. 102794 4956.50		
Society for Savings Savings Account No. A74668 4915.37		
Cleveland Trust Co. Commercial Account 1298.70		$13173.64

TRUST FUND SAVINGS ACCOUNT No. 110399

Balance in Bank August 31, 1945	$ 581.38	
DEPOSITS, September 1, 1945 to August 31, 1946		
Transfers from general Association account $568.50		
Interest earned 6.39	574.89	
	1156.27	
WITHDRAWALS		
Transfer of interest earned to Trust Fund Income Savings Account No. 110398	7.07	
Balance in Bank August 31, 1946		$ 1149.20

TRUST FUND INCOME SAVINGS ACCOUNT No. 110398

Balance in bank August 31, 1945	$ 37.13	
Transfer of interest earned, from Trust Fund	7.07	
Balance in Bank August 31, 1946		$ 44.20

TOTAL ASSETS

GENERAL ACCOUNTS:		
Savings Accounts	$11874.94	
Commercial Account	1298.70	
Investments (at cost)	29401.00	
Total		$42574.64
TRUST FUND ACCOUNTS:		
Savings Accounts	1193.40*	
Investments (at cost)	2331.00	3524.40
		$46099.04

**Last deposit, $22.80, not made until September, which accounts for the discrepancy between this report and the auditor's.*

—Gertrude L. Fife, Treasurer

MRS. FIFE HONORED BY A A N A

At the annual meeting of American Association of Nurse Anesthetists, Tuesday, October 1, by unanimous vote of the members in assembly, honorary membership in the Association was conferred upon Mrs. Gertrude Fife. Mrs. Fife is the second member of the organization to have been accorded this honor. Miss Agatha Hodgins was the first to receive honorary membership.

Mrs. Fife is a charter member of the Association. She was elected the second President, at the first annual meeting, held in Milwaukee in 1933. That year she published the first issue of the Bulletin of the American Association of Nurse Anesthetists (now THE JOURNAL). She acted as editor of THE JOURNAL for twelve years. She has served on many committees, now is Treasurer.

Mrs. Fife was Director of the University Hospitals of Cleveland School of Anesthesiology from 1934 until her retirement in January 1946.—E.H.H.

ASSOCIATION News
State, Regional and National

Georgia . . .

The seventh annual meeting of the Georgia State Association of Nurse Anesthetists was held June 2, at the Sheffield Clinic, Georgia Baptist Hospital, Atlanta.

Officers elected: President, Clara Mahoney, 1318 W. Peachtree St., Atlanta; Vice President, Mrs. Grace Rapp, 574 Collier Rd., N.W., Atlanta; Sec'y-Treas., Estelle Francisco, Crawford W. Long Hospital, Atlanta.

Massachusetts . . .

The annual meeting of the Massachusetts State Association of Nurse Anesthetists was held April 29, at the Nurses' Home, Lynn Hospital, Lynn. The minutes of the last meeting were read and approved. The treasurer's report, showing a balance of $292.54, was read and accepted. It was decided to have a lending library, available for members. Elizabeth Spalding was appointed chairman of the Library Committee.

Officers elected: President, Elizabeth MacRae, Peter Bent Brigham Hospital, Boston 15; 1st Vice President, Velma Whitney, Peter Bent Brigham Hospital, Boston 15; Sec'y-Treas., Mrs. Eva MacArthur, 80 Glen Road, Brookline 46. Trustees: Rose Sbarra (1 year), Mrs. Armitage (2 years).

Mississippi . . .

The Mississippi State Nurse Anesthetists met on July 28, at the Heidelberg Hotel, Jackson, for purposes of reorganization.

Officers elected: President, Evelyn Allen, Baptist Hospital, Jackson; Secretary, Janie Sanford, South Mississippi Infirmary, Hattiesburg; Treasurer, Mrs. Willie Bruce Maroon, Baptist Hospital, Jackson. Trustee, Sr. M. Crucifix Keller.

The Mississippi State Association of Nurse Anesthetists voted to join the Southeastern Nurse Anesthetists Assembly. The annual meeting will be held in conjunction with that of the Mississippi Hospital Association, October 17-19, in Biloxi. The date for the meeting of

EVELYN ALLEN, president of the Mississippi State Association of Nurse Anesthetists.

the anesthetists will be announced later. All members are urged to attend.

New York . . .

Officers elected: President, Verna B. Bean, 480 Herkimer St., Brooklyn; Vice President, Marcella J. Marseilles, 1365 York Ave., New York 21; Secretary, Mildred Cook, Coney Island Hospital, Brooklyn 23; Treasurer, Mrs. Ethel H. Power, 88 Horatio St., New York 14. Trustees: Sr. Anna L. Haug, Veronica Lang, Mrs. Anne D. Mahon.

New Jersey . . .

Officers and Trustees 1946-1947 elected: President, M. Catherine Horne, 633 Monmouth St., Trenton; Vice President, Mrs. Dorothy N. Ball, 157 N. 10th Ave., Highland Park; Secretary-Treasurer, Mrs. Dorothy N. Ball, 157 N. 10th Ave., Highland Park. Trustees: 1943-47, Mrs. Leona D. Woram; 1944-48, Martha E. Lowery; 1945-49, Harriet L. Aberg; 1946-50, Mrs. Frances M. Alburger.

Oklahoma . . .

The semi-annual meeting of the Oklahoma State Association of Nurse Anesthetists was held May 1, at the Supervisors' Home, Wesley Hospital, Oklahoma City. A dinner followed the meeting.

Officers elected: President, Mrs. Beatrice W. Pitt, 2335 N.W. 11th St., Oklahoma City; Vice President, Mrs. Margaret Stallings, Evans, Wesley Hospital, Oklahoma City; Sec'y-Treasurer, Julia D. Loftus, Community Hospital, Elk City.

Wisconsin . . .

Treasurer: Leone A. Theilen, 1524 Grand Ave., Racine, Wis.

VERNA BEAN, president of the New York State Association of Nurse Anesthetists.

CLARA MAHONEY, president of the Georgia State Association of Nurse Anesthetists.

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IN MEMORIAM

Helen U. Carney, an anesthetist at Youngstown Hospital, Youngstown, Ohio, died at her home, March 8, 1946, after an illness of more than five months. She was a member of the American Association of Nurse Anesthetists and the Ohio State Association of Nurse Anesthetists. She served as secretary-treasurer of the latter. Miss Carney was graduated from the Buhl School of Nursing, Sharon, Ohio, and the Lakeside School of Anesthesia, Cleveland, Ohio. She had been employed at the Northside Unit of Youngstown Hospital since its opening in 1929. Her death is a great loss to all who knew her.

Mrs. Genevieve Lewis Barbee died April 8, 1946. Mrs. Barbee, who had been a member of the American Association of Nurse Anesthetists since 1936, was graduated from the school of anesthesia of Long Island College Hospital. She had been a member of the California Association of Nurse Anesthetists for many years. Mrs. Barbee, whose death was a great shock to her entire community where she was highly esteemed, is survived by two children, two sisters and a brother.

Margaret Fanny Rudkin died August 30, 1946 at the Victoria Home for Aged British, Ossining, New York. Miss Rudkin, a graduate of the school of Anesthesia of Jefferson Clinic, Detroit, Michigan, became a member of the Virginia State Association of Nurse Anesthetists and the American Association of Nurse Anesthetists in 1934. She retired from the field of anesthesia in February 1946, becoming an Inactive Member of the Association.

Nellie Iris Peeks died May 17, 1946. Miss Peeks was graduated from the school of anesthesia of Charity Hospital, New Orleans, Louisiana. She became a member of the AANA in 1943. A former member of the Oklahoma State Association of Nurse Anesthetists, Miss Peeks had moved to Hereford, Texas a short time before her death.

Ruth Darlene Hackbarth, a member of the American and New Jersey State Associations of Nurse Anesthetists, was thrown from a horse on June 24. She died from the injuries on June 26, 1946. Miss Hackbarth was graduated from the school of anesthesia at Jewish Hospital, Philadelphia.

NOTES FROM THE EXECUTIVE OFFICE

Two new state associations are in the process of being organized and are applying for affiliation with the American Association of Nurse Anesthetists. Officers have been elected, but the affiliation is not official until passed by the Board of Trustees. The following states have elected as officers:

MARYLAND: President, Mrs. Marion Wark Thomas, Johns Hopkins Hospital, Baltimore 5; Vice President, Olive Berger, Johns Hopkins Hospital, Baltimore 5; Secretary-Treasurer, Doris E. O'Mailey, 122 No. Patterson St., Baltimore 13; Trustees, Mary O'Brien, Laura Sullivan.

SOUTH CAROLINA: President, Kern Lunsford; Secretary-Treasurer, Ida C. Holden, Camden Hospital, Camden.

It is hoped that other states will consider forming state associations. Write to the Executive Office for information concerning procedures.

Miss Hazel Blanchard (left) retiring president, hands the gavel to Miss Lucy Richards (right) newly elected president of American Association of Nurse Anesthetists. Officers of the Association, some elected at the annual meeting October 1, 1946 and others whose terms carry over, are: Myra Van Arsdale, 1st vice president; Edith-Helen Holmes, 2nd vice president; Gertrude Fife, treasurer. Trustees—Palma Anderson, Marie N. Bader, Ruth Bergman, Mabel E. Courtney, Ann Decker, and Alma Webb.

Report of President

Presented at the Annual Meeting of AANA, October 1946

Lincoln said, "I will study and get ready, and perhaps my chance will come." After listening to the many reports to be read at this session, learning what has been accomplished in the past two years, and the programs about to be developed, you will realize that your chance will come to be of service to the many graduates in this specialized field.

This Association has approximately 3,500 members and at the present time only a handful is helping to further your interests. This chairman has already reminded the Board of Trustees that from this number of members there are persons with intellectual capabilities, educational and organizational skills, and those with experience who can contribute sound judgment. There are three kinds of people in the world: The wills, the won'ts, and the can'ts. The wills accomplish everything; the won'ts oppose everything; and the can'ts fail in everything. The time is here when we as an organized group

should prove to ourselves and the professions to which we are allied, that we have ideals; that we are living up to them, and that we are willing to cooperate with the medical profession and are capable of serving the surgeons with whom we work.

You may ask, "How can I, as a member of this Association, help to develop and make secure the future of the nurse anesthetist?" There are several ways which this chairman would like to suggest.

1. That you indicate your willingness to serve your Association in whatever capacity you are most fitted.

2. That each member contribute material for THE JOURNAL by reporting interesting cases, submitting book reviews, news items, lesson plans, or any material of instructive value to the members and the organization.

3. That more members sacrifice some time, rather than a few—a great deal of time—to do some small part of the work entailed by an organization of this size.

4. That the members convince their administrators of the value of making it possible for you to attend all meetings; whether it be Board, Committee, or Annual Conventions, and that you come prepared to present your ideas and propositions to the assembled group in a manner authorized by good parliamentary procedure.

5. That you place in office and on your Board of Trustees, members who, in your opinion, will best serve your interests.

6. That the members have the utmost confidence in their Board of Trustees.

7. That the relationship between this organization and groups with which we are affiliated; because we are nurses, because we assist surgeons, and serve hospitals; will be one of cooperation and friendliness through your loyalty, wisdom and foresight. Shakespeare said, "There is nothing either good or bad, but thinking makes it so."

The resolution of many problems which reports will show have been solved could never have been accomplished without the cooperation of every member. To the Executive Secretary, who has ably administered your affairs, I wish to extend my gratitude for her splendid work, my sincere respect for valuable advice, and her interest in any and all programs which are of advantage to the nurse anesthetist. To the Board of Trustees, I am exceedingly thankful for their constant efforts and loyal cooperation. The term of office of this chairman terminates at this convention, so in concluding this report I would like to leave one thought with you. In my opinion, the program for the Approval of Schools, the outline of which many of you had an opportunity to discuss at the previous session, is the most important project undertaken by this Association. The ultimate plan is in the formative stage, and the ground work alone will consume a period of one to two years; but to be of value the project must be carefully worked out without interruption, and given sufficient financial support to guarantee the best results. This program will set standards and determine the value of the adequately trained nurse anesthetist.

Respectfully submitted,
—Hazel Blanchard,
President, AANA

EFFECTIVE AT ONCE!

The office of the Treasurer was moved to Chicago November 1, 1946. All dues, remittance sheets, and subscription blanks are to be sent to the Executive Secretary, Anne M. Campbell, 18 East Division Street, Chicago 10, Illinois.

Annual Report of Executive Secretary

Presented at the Annual Meeting of AANA, October 1, 1946

The first Peace-Time Convention of the American Association of Nurse Anesthetists should be a milestone in its history of fifteen years as an organization. The Association may well feel proud of the contribution made by its members to the war effort. Hundreds of members were engaged in military service in this country and overseas. Hundreds more, in remaining at home, manned the civilian hospitals, carrying extra work and thus helped make it possible to release nurse anesthetists for military service. The schools of anesthesia did yeoman service in training much-needed anesthetists all during the war.

When the war started, there were 30 states which were organized and affiliated with the National Association. Due to the shortage of anesthetists and consequent overwork and long hours for some members, as well as restrictions on travel, two state associations were inactive for one or more years. Both have recently held elections and are again active. Two states, Maryland and South Carolina, hitherto unorganized, are now in the process of organization.

The Tri-State Assembly maintained its organization during the war, but in compliance with government requests and regulations, held no meeting in 1945, resuming meetings in 1946. The Southeastern Assembly, which omitted meetings for some of the war years, held a meeting in the spring of 1946. New England organized an Assembly and held its first meeting in March 1946.

A new venture, the Institute for Instructors of Anesthesiology, held in October 1945, was so successful that two different projects have resulted from it. You will hear more of these from the chairman of the Institute Committee who organized and conducted the first Institute.

The total paid memberships for 1946, as of September 23, are 3,458. This is a slight increase over the number on the membership graph and over the membership listed by states on the map. The graph had to be made and chart and map shipped early, but this is the latest count. Institutional memberships for 1946 total 43. A goodly number of members who, for one reason or another, permitted their membership dues to lapse, are inquiring about reinstatement.

During the past year, your Executive Secretary has attended the following meetings: Annual meeting of Board of Trustees, Chicago, October 3-7; Institute for Instructors in Anesthesiology, October 8-13, Chicago; Wisconsin State Association of Nurse Anesthetists, November 17, 1945, Milwaukee; New England Assembly of Nurse Anesthetists, March 12 and 13, Boston; Tri-State Assembly, May 1, Chicago; Joint Committee of American Hospital Association and AANA on Approval of Schools, May 2, Cleveland; Board of Trustees, May 12 and 13, Cleveland; Committee on Examinations, June 9, Chicago; Institute Committee, August 23, Chicago. While in Boston in March, she had a conference with the Director of the School of Nursing of Boston University, and in New York with various members of the editorial staff of the American Journal of Nursing. She has had a number of conferences with the Executive Director of AHA. She has conferred at various times with

members of the staff of the American College of Surgeons and with the Physicians Record Bureau of Chicago. The anesthesia records which you received recently, devised by the Committee on Anesthesia Records of the Association, were printed by the Physicians Record Bureau, from whom they may be purchased.

Since THE JOURNAL is now published in Chicago, she has assisted the Chairman of the Committee on Publications in reading all proof for all issues of THE JOURNAL, commencing with the November 1945 issue. She has attended meetings of the Committee on Publications, as well as conferences with the editor. She has done some editorial work in connection with THE JOURNAL.

In preparation for this convention, the Executive Secretary wrote letters to the speakers, requesting them to appear on the program. These letters were sent to the chairman of the Program Committee for her signature. Presiding officers were contacted by the Executive Secretary, who secured biographical sketches of speakers, which were forwarded to presiding officers. The physical arrangements for all meetings were made through the Executive Office. The foregoing contributions to the convention are, however, minor compared to those of the chairman of the Program Committee.

This year, your Association, for the first time, had an Educational Exhibit at the Biennial Nursing Convention in Atlantic City, held just prior to this convention. Arrangements for this exhibit were made by the Executive Secretary.

The membership list is maintained by the Executive Office. It would facilitate accuracy in maintaining it if members would notify us promptly of changes in name and address. These should reach us three weeks prior to the mailing date of THE JOURNAL. In sending changes of name and address, it is helpful if former, as well as new, names and addresses are given. Requests for transfer, or indication that an address is temporary, and for how long, are also helpful. According to Article II of the By-Laws, a person must be a member of the state association of the state in which she lives or works. We have many requests for exceptions to this By-Law. It is not within the power of the Executive Secretary to make exceptions to the By-Laws. We have carried some members of a state organization with a "temporary" address in another state for five years. After the publication of the membership list last May, we wrote all such members, drawing attention to this provision in the By-Laws and requesting information concerning residence and occupation. This has resulted in some needed corrections in the membership list. There are still some members in the service who are carried as members of the state association to which they belonged before entering the service. There are also members whose husbands are in the service who are considered members of the state association to which they belonged, prior to the time they joined their husbands, and have an address which we presume to be temporary.

According to the By-Laws, application for Inactive Membership must be made annually. Inactive application forms were sent to all Inactive Members on August 1, 1946. All applications for Inactive Membership for 1947 should reach the Executive Office by January 1, 1947. This will give ample time for them to be considered by the Committee on Credentials and for the member to pay her dues before March 1, 1947, after which the penalty fee is imposed.

From September 1, 1945, to September 1, 1946, 232 Association pins were ordered through the Executive Office.

During the same time 415 sleeve emblems were sold. Lists of schools and the pamphlet "Anesthesiology, A Specialized Field for Professional Registered Nurses" have been sent in response to 494 requests; in addition, 598 copies of the pamphlet alone have been mailed. Many of the latter requests were received because the pamphlet is listed in various lists of vocational material.

Requests for anesthetists have been received from 138 hospitals. Many of these are repeat requests. We maintain a list of hospitals in need of anesthetists and a list of members wanting positions. This is sent to hospitals wanting anesthetists. The list of hospitals needing anesthetists is too long to copy and send to members, therefore, we ask them to specify the states in which they are interested in working and information about hospitals in those states is sent on request. Two suggestions seem pertinent in connection with this service: (1) that members who write us concerning positions, notify us when their names should be removed from the list, giving corrected mailing address, and (2) that members acknowledge letters received from hospital superintendents, thus avoiding criticism of the Association and its members.

In replying to letters from hospitals in regard to anesthetists, an announcement concerning classified ads in THE JOURNAL is always enclosed. Members are reminded that they may also advertise through this medium. In answering classified ads which appear in THE JOURNAL, it is suggested that members acknowledge THE JOURNAL ad.

The second examination was held November 19, 1945, with 166 examinees. Of this number, 139 passed and 27 failed. The third examination was on May 6, 1946. Of the 203 examinees, 181 passed and 22 failed.

The routine procedures in handling applications are so numerous and there are so many possible causes of delay, that I shall outline them, so you may know why we ask that they be submitted two months before the examination date. They consist of the following:

1. Assigning membership number and remitting application fee to National Treasurer.
2. Making our financial and mailing cards for each applicant.
3. Acknowledgment of application.
4. Checking state registration of applicant.
5. Sending for transcript of school record.
6. Submitting application to state secretary.
7. When all above have been assembled, submitting to National Committee on Credentials.

When applications are returned by National Committee on Credentials, the following procedures are entailed:

1. Notifying applicant of decision. If eligible, she is sent an outline of study and sample questions, and asked to send $15.00 examination fee and picture, for identification, signed on picture side.
2. The National Treasurer is notified of eligibility and ineligibility.
3. State secretaries are notified of eligibility and ineligibility.

Hospital superintendents are contacted and asked to furnish a room for the examination and appoint a proctor. The proctors are contacted, and two or three weeks before the examination date, are sent information for giving the examination, a copy of the instructions which have been sent examinees, examination cards, on which examinee's photograph has been mounted and identification number recorded. Examinees are sent instructions for examination, identification number, and notice of time and place of examination.

The examination papers are returned to the Executive Office by the proctors and are forwarded to the grading mem-

bers of the Committee on Examinations. Grades are returned to the Executive Office. Statistics are compiled, and examinees, the National Treasurer and state secretaries notified of results. Proctors' checks and a letter of thanks are mailed.

That is the procedure if an application goes through in a routine manner. Delays may be due to the following:

(1) Applicants do not fill out application completely, necessitating a return of application or a letter requesting additional information.

(2) Applicant may not be currently registered in any state. As many as four letters have been written in the attempt to establish current registration for some applicants.

(3) States may hold applications, requiring follow-up letters, or, they may return application without indicating recommendation, or unsigned, this requires returning application to state secretary.

(4) Occasionally applications have been lost in transit.

(5) Occasionally applicant, or state secretary fails to send application fee, another letter.

(6) School directors do not return transcripts promptly, second letters are often written, and in some cases, four requests have been sent directors before the transcript has been returned. As army hospitals are discontinued and doctors return to civilian life, it is increasingly difficult to secure transcripts for anesthetists trained under them. Records have been left with the hospital or were not kept.

(7) Applicants change name and address during the time applications are being handled. This necessitates notifying National Treasurer and state secretaries.

The Executive Staff consists of Ruth Huseman, secretary, who handles office correspondence, remits monies to the Treasurer, and has charge of filing. Alexandra Hubbard is in charge of the examinations and handles applications. She does all the mimeographing, which includes form letters, letters to state officers, examination questions and all mimeographing pertaining to the examination, outlines of studies, sample questions, instructions to proctors and examinees, curriculum, educational record blanks, rules of convention, ballots, etc. Because of the increased amount of mimeographing and the fact that there are ever-increasing demands on the mimeograph machine of the A.H.A., the Board of Trustees has recently authorized the purchase of a new mimeograph machine, equipped with a motor. Josephine McMahon records dues and keeps the membership list up-to-date. It is she who sends you notices about undelivered JOURNALS, writes about changes of address and mails copies of THE JOURNAL you have not received.

The Executive Office was moved from 18 East Division Street to the English Basement at 22 East Division Street, in July 1945. In October 1946, we expect to be moved to the top floor of the building in which we are now located.

One of the pleasant diversions of any day's work is having members visit the Executive Office. It is hoped that climbing of two flights of stairs will not discourage members from calling on us.

The fact that so many new applications are being received and so many former members are inquiring about re-instatement, indicates that membership in the Association is important to nurse anesthetists. The increase in membership would seem to indicate a healthy state of the Association. Active participation in state and national associations on the part of all members is needed, for in a united effort there is strength, inspiration and growth. Bring your problems to the National Association. Let us know what you

need and want. Give us your constructive criticism. The Association is yours, yours to help build into a more vital and important Association. Remember —"Service is the rent we pay for the space we occupy."

Respectfully submitted,
—Anne M. Campbell
Executive Secretary

Report of the Credentials Committee

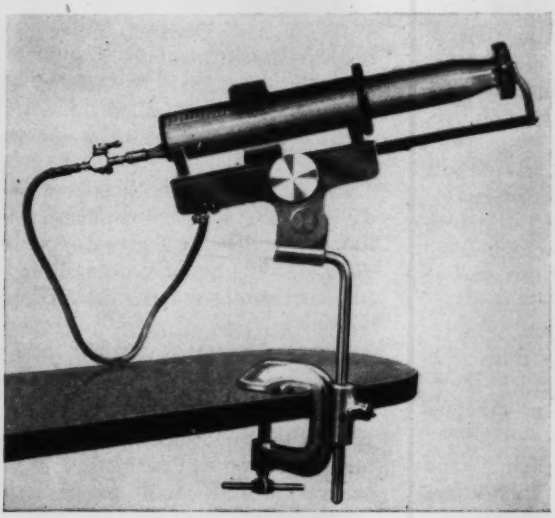
APPLICANTS APPROVED FOR EXAMINATION 352
APPLICANTS REJECTED FOR EXAMINATION 27
APPLICANTS APPROVED FOR INACTIVE MEMBERSHIP 163
APPLICANTS REJECTED FOR INACTIVE MEMBERSHIP 2
APPLICANTS APPROVED BY OLD BY-LAW'S RULING 5
APPLICANTS REJECTED BY OLD BY-LAW'S RULING 1
APPLICANTS—NO ACTION 15

565

APPLICATIONS ON HAND, TO BE STUDIED DIRECTLY FOLLOWING THE CONVENTION 87

TOTAL 652

Respectfully submitted,
Anne Dickerson
Myra Van Arsdale
Lucy E. Richards, Chairman



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NURSE ANESTHETISTS: Needed for a 250-bed general hospital. $300 a month with meals. For particulars write: St. Elizabeth's Hospital, Yakima, Washington.

WANTED ANESTHETISTS: For Good Samaritan Hospital, Portland, Oregon. Address: Alta Hollenbeck, Good Samaritan Hospital, Portland 10, Oregon.

WANTED: Two Registered Nurse Anesthetists, Hilo Memorial Hospital, Hilo, Hawaii. Starting salary $192.50 plus $45 temporary bonus. Must have at least one year's graduate anesthesia experience. $150 of transportation cost refunded after one year of continuous service. Mature women preferred.

WANTED: For purchase. Copies of Volumes I, II and III; and of August 1940 issue BULLETIN American Association of Nurse Anesthetists. Will pay reasonable price. Communicate: Florence McQuillen, Mayo Clinic, Rochester, Minnesota.

NURSE ANESTHETIST will consider relief work for period of one to three months' duration in general hospital or oral surgeon's office. Helen M. Speers, 2150 Pennsylvania Ave., NW, Washington, D. C.

ATTRACTIVE OPENING mature woman, pleasing personality, registered nurse-anesthetist with administrative experience to act as superintendent of nurses and anesthetist, overseeing twenty registered nurses plus housekeeping staff. No business responsibility. Ten miles from San Francisco Civic Center. Write: Thos. C. McVeagh, M.D., 500 Grand Avenue, South San Francisco, Calif.

WANTED: Nurse Anesthetist. 75-bed hospital located in foothills of Blue Ridge Mountains. Approved by A. C. S. Two anesthetists employed. Salary open. Apply Superintendent, Pulaski Hospital, Pulaski, Virginia.

WANTED: Anesthetist for 75-bed approved hospital in Charleston, S.C. Write: Baker Memorial Sanitarium, Charleston, S.C.

ANESTHETISTS: Nurse Anesthetists needed for 100-bed, modern, well equipped hospital, employing only graduate staff. Especially attractive location on San Francisco Bay, within 40 minutes of San Francisco. Apply today to: Administrator, Alameda Hospital, Alameda, California.

WANTED: Nurse-anesthetist. Good salary, including full maintenance if desired, or allowance for living out. Will accept new graduate. Apply Superintendent, Woman's Hospital, 432 E. Hancock Avenue, Detroit 1, Mich.

WANTED TWO NURSE ANESTHETISTS. 150-bed hospital. Five nurse anesthetists employed. Attractive salary, no maintenance. Majority of surgical work performed during the morning. Only small amount of emergency work. For particulars write Scott & White Hospital, Temple, Texas, c-o G. V. Brindley, M.D.

WANTED: A nurse anesthetist, competent in intravenous; good experience. Modern non-profit, general hospital, not a government institution. Interview. Write all about yourself to Charles W. Cotter, Superintendent, Washington County Hospital, Hagerstown, Maryland.

FULLY APPROVED Chicago hospital is increasing number anesthetists so that no member will have to carry an abnormal amount of work. Salaries are subject to negotiation and reasonable requests will be met. Contact Jackson Park Hospital, Chicago.

POSITION NOW OPEN for a Nurse Anesthetist in accredited hospital. Excellent working conditions, good salary, full maintenance. Write: Anesthetist-in-Charge, Presbyterian Hospital, Newark, New Jersey.

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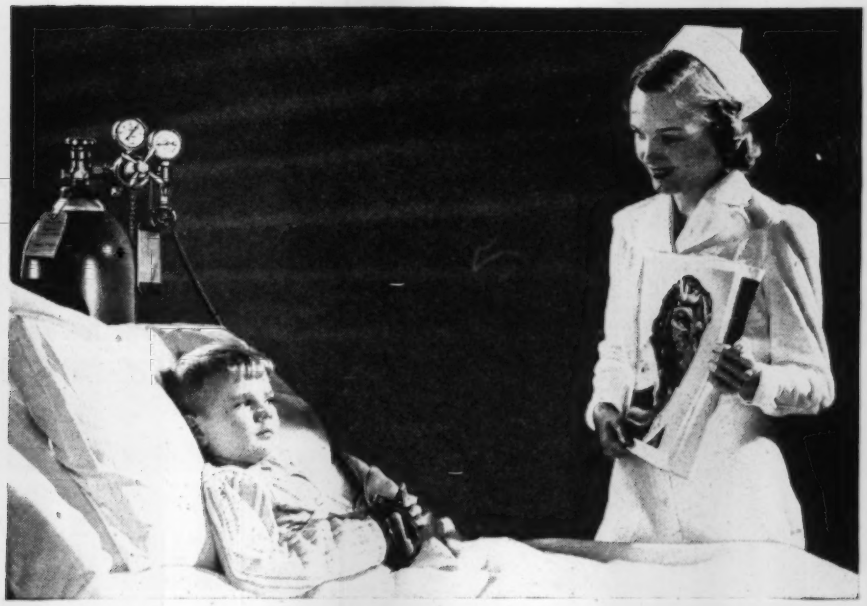

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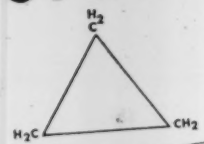

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